SU-30 Thesis

The care and feeding of the Marine Mobile Armored Cavalry Regiment.

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“An army marches on its stomach.” Napoleon Bonaparte. The greatest military mind of the early 19th century made this quote. Was it frivolous fancy? Or rather a simple but powerful axiom of modern combat, that generals, marshals, and dictators ignored at their own peril. Napoleons own armies were stopped at the gates of Moscow, because of lack of supplies; over a century later Hitler’s Nazi steamroller met the same fate. Time and time again, the army that did not plan to maintain and protect its logistics tail—would fail in its attack, falter, and be driven back.

As much as this was true on old Earth, it is still true today, and no more evident than with the ground and deployed forces of the Starfleet Marines Corps. And even more evident is the fact that those marines needs to be transported to the battle, over great distances, and with all of their own supplies, for those situation where they positively cannot live off the land.

What then can and should be done to provide this combat support for the Marine Corps, should the SFMC have its own ships? Should the fleet provide dedicated transports for Marine troops and supplies, should the Marines establish garrisons and only venture out from those facilities when needed, and only build new such facilities during peacetime? Obviously the second concept is the best idea. Marines are neither the best suited nor the most desired personnel to operate starships. Their training and expertise is better-suited and utilized in ground and ship to ground operations. Fleet personnel assigned to and operating dedicated Transports, Supply Vessels and pre-positioned ships, give the SFMC the long reaching capability during times of conflict, while reducing the

numbers of troops and garrisons needed across the Federation during the longer periods of peace.

Thus it is proposed that a dedicated combined fleet-corps element be created that is both pre-positioned and rear garrisoned, combining Marine Support and Logistical experts as well as Fleet Transport and Ship crews into a Advanced Logistical Load Insertion Group And Tactical/Operational Resource, or ALLIGATOR, ‘Gator for short. The ‘Gator will be responsible for the total deployment and re-supply of whatever Marine Armored Cavalry Unit it supports, be it Troop, Squadron or Regiment.

As early as my Aerospace –30 thesis, I have shown that the modern Marine combat arena is a three dimensional battlefield reaching from the depths of space to subsurface tunnels and all the air and space in between. That paper was strictly mathematical in nature, using equations based on the laws of physics and generally accepted and know aerodynamic principles. While combat cannot always be broken down into such exact formulas, the general rules of logistics (how much food will a marine eat, how often will his equipment break, how often will her vehicle need to be repaired, how often will a weapon need to be recharged) can themselves be broken down into generally accepted and time-honored formulas. These formulas tell you how much mass needs to be transported from Garrison A, to Battlefront B, and how much lift capability is needed to get it there.

But as my IN-30 thesis shows, the Marine Infantry component of the Mobile Cavalry is a very heavy unit, from the squad to the division level, and requires more support, more lift, and more replenishment, than one would normally suspect. The veteran fire team leaders, squad leaders, Platoon leaders will wisely carry more equipment in battle than their TO&E (Table of Organization and Equipment) requires. This means more lift necessary per man, and more re-supply of fuel and batteries will be called for during the battle. So this then must be figured into the formulas mentioned above.

Finally, the AR-30 thesis detailing the structure of the Marine Mobile Armored Cavalry units: Troops, Squadrons and Regiments, begs for some logistical detail. How do we get the Marine, his Powered Armor, her Tank, their Food, … Ammunition, Batteries/Fuel cells, replacements, Medical Supplies? How do we house these Marines while they are in the field, how do we get the Marines from the battlefield to the MASH's, how much training does it take to provide this level of high energy combat operations. These questions were asked. AND … this paper will endeavor and succeed in answer them. From how each carrot stick gets to the Vulcan Gunnery Sergeant, to how each Gallipoli class transport must be positioned to deliver their cargo of combat ready marines. Logistics: the care and feeding and transport of those marines is the key, as Colonel Copple once quoted an historical USMC Commandant, General Charles C. Krulak **"Amateurs study tactics, and professionals study logistics."** We are professionals and are studies therefore must focus on professional needs.

This paper will present a solution to the logistical needs of the Marine Mobile Armored Cavalry Units. First for the Cavalry Troop, there will be detailed analyses of the initial supply of food, fuel, and ammunition for the Troop. The transport of the Marines, their equipments and overhead support will then be outlined. In addition there will be reference to and inclusion in the Appendices the new variant of the Intrepid Class for MMAC-Troop transportation, the *Puma* Class Transport, which includes many of the advances first studied on the Intrepid Class - USS Jaguar. Finally additional analyses will be made on the need for re-supply and replenishment of needed food, fuel, and ammunition, as well as replacement manpower from rearward garrison and training facilities.

Secondly, for the Cavalry Squadron, in almost equal detail a set of analyses of the initial supply of food, fuel, and ammunition for the Squadron. The transport of the Marines, their equipments and overhead support for this larger unit will be outlined. In addition there will also be reference to and inclusion in the Appendices the new variant of the Akira Class for MMAC-Squadron transportation, the *LeJeune* Class Transport, which includes many of the advances first studied on the *Akira* Class version of the USS *Jaguar*. Finally additional analyses will be made on the need for re-supply and replenishment of needed food, fuel, and ammunition, as well as replacement manpower from rearward garrison and training facilities, as well as those reserve facilities aboard the *LeJeune* class itself.

Lastly, for the Cavalry Regiment, again in almost equal detail a set of analyses of the initial supply of food, fuel, and ammunition for the Regiment. The transport of the Marines, their equipments and overhead support for this largest Cavalry unit will be outlined. In addition there will also be reference to and inclusion in the Appendices the new vessel design the *Gallipoli* Class for MMAC-Regiment transportation. The *Gallipoli* is the newest and most modern version of the Fleet Marine Space Control Ship, carrying on in the fine tradition of the *Normandy* Class, the *Fredrickstaad* Class, and the *Continent* Class ships of the mid to late 23rd century. Finally additional analyses will be made on the need for re-supply and replenishment of needed food, fuel, and ammunition, as well as replacement manpower from rearward garrison and training facilities, as well as those reserve and training facilities aboard the *Gallipoli* class itself.

PART ONE : THE MARINE MOBILE ARMORED CAVALRY TROOP

To determine the care, feeding and transportation of the Troop, we will first have to define what units, personnel and equipment are contained therein. The Cavalry Troop has 3 platoons with a total of 21 line vehicles (9 Guderian tanks, 9 Smith-Webber Infantry Fighting Vehicles, and 3 Shandar Command and Communications vehicles) with 168 line marines, AND a headquarters detail of one Guderian, one Smith-Webber and two Shandars with 8 crew, 12 infantrymen security detail and 12 headquarters staff, for a combination of 25 vehicles, and 200 marines, about 50% more weight of fire then a standard Armor Company/Troop.

How do you supply this unit, and with what quantity of Food, Fuel and Ammo do you supply them? The second question must be answered first. The standard is to pre-equip the Marine Unit with one weeks worth of rations and supplies, however for the Cavalry unit, which is used at greater distances, two weeks worth of rations and supplies are necessary. Each Marine in combat is expected to consume 3000-5000 calories of food and 2.5-3.75 liters of fluids a day. That much Food/Fluid will weigh on average 7.5 kilograms, or 105 kilos for the two week period per Marine, and factored out 21 metric tons of food per Troop.

In addition the Troop will need to carry fuel for that period of time. It needs to be figured what the maximum amount of fuel that a troop will use, even in combat for two weeks, if the vehicles sustain operations for 50% of each day. So that fuel cells equal to 168 hours of sustained operations for 25 vehicles are required. The Guderians require 4 cells each for 100 hours of operations, or 7 cells for each of the 10 Guderians, 70 total (40 in the power plants, 30 in storage racks. Both the Smith-Webbers and the Shandars require 2 cells each for 100 hours of operations, or 3.5 for each of the 15 IFVs, 48 total (20 in the power plants and 18 in storage racks. This means that the troop must carry 48 additional charge packs, weighing 175 kilos each, or 8.4 metric tons per Troop.

Ammunition supply is a little more complicated as there are different types of expendable ammunition rounds (grenade, torpedoes, and rockets) and also different sizes of weapon charge packs. What is given, that each of the 200 marines will if in a

solid combat will need to change their phaser power packs every 50-100 minutes, average 75 minutes. And if in combat for 8 hours a day, every day for the two weeks (a hugely large amount of combat time), would require 6.4 power packs per day, 90 power packs for every marine – 18,000 for the entire troop. At 0.5 kilos per power pack, that adds 9 metric tons to the load out. Add an additional 250 large power packs for the portable equipments, at 20 kilos each and that's another 5 metrics tons, however no additional charge packs are needed for the vehicle weapons, as these are charged by the same power plant used for propulsion. Finally 2800 grenades, 100 man portable missiles, 250 vehicle launched torpedoes, and miscellaneous ammunition load-outs, with 2.8, one, 10, and 3 metric tons of mass respectively. Total ammunition load-out mass: 30.8 metric tons.

Combined mass of supply for a Cavalry Troop is 21 metric tons (mt) of food, 8.4 mt of power cells, and 30.8 mt of ammunition for a total of 60.2 metric tons of supplies to conduct a minimal two weeks of combat operations. Now we know how much **'stuff'** accompanies those 200 Marines and their 25 vehicles. But how does it get to the system, and how does it get to the planetary surface?

How do we move that many marines from their garrisons to the battlefront? Two hundred marines each require 10 cubic meters of living space, and 20 cubic meters of training, dining, and recreation space. Thirty cubic meters each or 6000 cubic meters. In addition their 25 vehicles and personal equipment take up 144 cubic meters per vehicle (and 58.08 metric tons each) and 2 cubic meters of equipment per marine, 3600 and

400 respectively and 4000 total. Finally the above 60.2 metric tons of equipment mentioned above take up roughly 5000 cubic meters. So the transport craft must provide 13,000 cubic meters of volume for the equipments AND the marines, massing over 1500 metric tons of equipment, supplies and marines.

The replenishment of the troop, requires the three groups of items above: Food, Fuel and Ammo, and in addition the Troop will need new personnel, both to replace those killed and injured, as well as those who need to be recycled from the front. While a *Puma* class can be used to carry the Troop and its initial supply, it would have to leave the combat/drop zone to pick up supplies and replacement troops. This leaves the Marine Commander two other choices for re-supply: first, another *Puma* class ship can be used, two of which are assigned to each Marine Brigade; second, a non-combat supply vessel with proper escorts (*Defiant, Rapier,* or even *Steamrunner* classes) can be used to bring the supplies and troops from the rearward areas to the front. Minimum requirements for re-supply should be figured on travel time for the journey of the supply ship to and from the combat zone. If for instance, the journey takes one week each way, the ship will have to bring two weeks worth of combat supplies, approximately 60.2 metric tons. In addition, two weeks of combat operations will generally require 25% replacements or 50 additional marines and 6 or 7 vehicles. Thus the *Puma*, or the supply ship will need to carry the 446.45 metric tons (7,500 cubic meters of volume) and the 50 marines and their vehicles.

Both the *Puma* and whatever supply ship that is bringing troops/supplies must be equipped with the Type 9M Marine Transport Shuttle in addition to normal Personnel and/or cargo transporters to deal with situations where transport inhibitors are actively being used by the enemy.

Part One tables and graphics:

Table One: The Marine Mobile Armored Cavalry Troop

Unit	Manpower	Equipment	Mass	Volume
First Platoon	56 Marines	3 Guderians 3 Smith-Webbers 1 Shandar	429 Metric tons	3640 Cubic Meters
Second Platoon	56 Marines	3 Guderians 3 Smith-Webbers 1 Shandar	429 Metric tons	3640 Cubic Meters
Third Platoon	56 Marines	3 Guderians 3 Smith-Webbers 1 Shandar	429 Metric tons	3640 Cubic Meters
Headquarters	32 Marines	1 Guderian 1 Smith-Webber 2 Shandars	245 Metric tons	2080 Cubic Meters
Total Troop	200 Marines	10 Guderians 10 Smith-Webbers 5 Shandars	1532 Metric tons	13,000 Cubic Meters

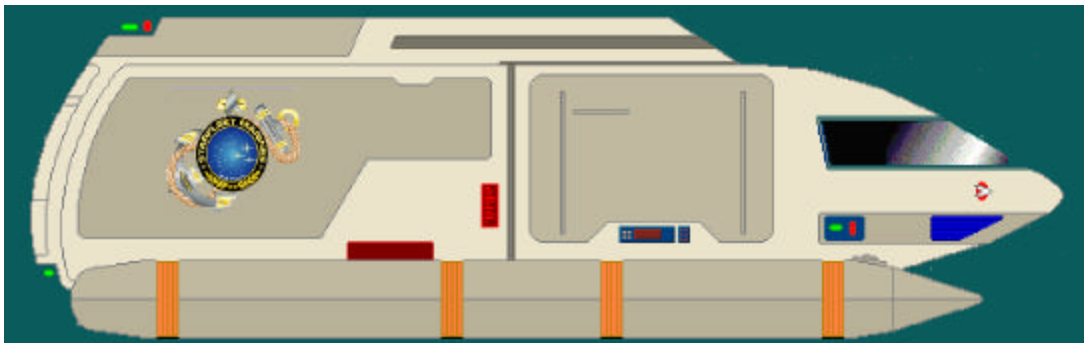
Table Two: Supply the Troop

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	21 Metric tons	1744 Cubic Meters
Fuel	8.4 Metric tons	686 Cubic Meters
Ammunition	30.8 Metric tons	2570 Cubic Meters
Vehicles	1452 Metric Tons	4000 Cubic Meters
The Marines themselves	20 Metric tons	6000 Cubic Meters
Total	1532.2 Metric Tons	13,000 Cubic Meters

Table Three: Re-supplying and Re-manning the Troop

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	21 Metric tons	1744 Cubic Meters
Fuel	8.4 Metric tons	686 Cubic Meters
Ammunition	30.8 Metric tons	2570 Cubic Meters
Vehicles	381.25 Metric Tons	1000 Cubic Meters
The Marines themselves	5 Metric tons	1500 Cubic Meters
Total	446.45 Metric Tons	7,500 Cubic Meters

Figure One: Type 9M Marine Transport Shuttle



MARINE TRANSPORT SHUTTLE SPECIFICATIONS

Displacement	6.6	mt
Overall Length	10.5	m
Overall Draft	3.6	m
Overall Beam	4.2	m
Propulsion:	Two 3,250 millicochrane warp engines (Starfleet Plant #24, Utopia Planetia Fleet Yards, Mars) Twelve DeFl 2142 RCS thrusters (Starfleet Plant #24, Utopia Planetia Fleet Yards, Mars)	
Velocity:	Warp 1.5 Warp 2.5 Warp 3.0	Standard Cruising Speed Maximum Cruising Speed Maximum Attainable Velocity for 12 hours
Duration:	1 month standard	
Complement:	1-2 0-12 1-14	Officers Passengers (Normal – Up to 30 Maximum) Total Crew (Standard)
Embarked Craft:	none	
Navigation	RAV / ISHAK Mod 3 Warp Celestial Guidance (System Contractor: Tlixis Ramab RRB, Coridan III)	
Computers:	M-7	Multitronic Computer - Isolinear II with LCARS 1.0 interface software (System Contractor: Daystrom Computer Systems, Luna)
Phasers:	2 Type V Phaser Emitters (System Contractor: HiBeam Energies, Earth)	
Missiles:	None	
Defense:	DSF Primary Force Field and Integrity Field (System Contractor: Charlotte Shields, Earth)	
Life Support:	MS3x Modular Gravity Unit (Starfleet Plant #24, Utopia Planetia Fleet Yards, Mars) AL4 Life Support System (Starfleet Plant #24, Utopia Planetia Fleet Yards, Mars)	

PART TWO : THE MARINE MOBILE ARMORED CAVALRY SQUADRON

To determine the care, feeding and transportation of the Squadron, we will first have to define what units, personnel and equipment are contained therein. The Cavalry Squadron has 3 cavalry troops, and one fire support troop, with a total of 90 line vehicles (30 Guderian tanks, 33 Smith-Webber Infantry Fighting Vehicles, 8 Pattons with Artillery modules and 19 Shandar Command and Communications vehicles) with 700 line marines, AND a headquarters detail of three Guderians, three Smith-Webber, six Shandars and four ambulance with 100 marines in the HQ detail. Combined these give 106 vehicles, and 800 marines, about 75% more weight of fire then a standard Armor Battalion.

How do you supply this unit, and with what quantity of Food, Fuel and Ammo do you supply them? The second question must be answered first. The standard is to pre-equip the Marine Unit with one weeks worth of rations and supplies, however for the Cavalry unit, which is used at greater distances, two weeks worth of rations and supplies are necessary. Each Marine in combat is expected to consume 3000-5000 calories of food and 2.5-3.75 liters of fluids a day. That much Food/Fluid will weigh on average 7.5 kilograms, or 105 kilos for the two week period per Marine, and factored out 84 metric tons of food per Squadron.

In addition the Squadron will need to carry fuel for that period of time. It needs to be figured what the maximum amount of fuel that a squadron will use, even in combat for

two weeks, if the vehicles sustain operations for 50% of each day. So that fuel cells equal to 168 hours of sustained operations for 106 vehicles are required. The Guderians and Pattons require 4 cells each for 100 hours of operations, or 7 cells for each of the 41 AFVs, 287 total (164 in the power plants, 123 in storage racks. Both the Smith-Webbers and the Shandars (as well as the Ambulances) require 2 cells each for 100 hours of operations, or 3.5 for each of the 65 IFVs, 227 total (130 in the power plants and 97 in storage racks. This means that the squadron must carry 220 additional charge packs, weighing 175 kilos each, or 38.5 metric tons per Squadron.

Ammunition supply is a little more complicated as there are different types of expendable ammunition rounds (grenade, torpedoes, and rockets) and also different sizes of weapon charge packs. What is given, that each of the 800 marines will if in a solid combat will need to change their phaser power packs every 50-100 minutes, average 75 minutes. And if in combat for 8 hours a day, every day for the two weeks (a hugely large amount of combat time), would require 6.4 power packs per day, 90 power packs for every marine – 72,000 for the entire squadron. At 0.5 kilos per power pack, that adds 36 metric tons to the load out. Add an additional 1000 large power packs for the portable equipments, at 20 kilos each and that's another 20 metrics tons, however no additional charge packs are needed for the vehicle weapons, as these are charged by the same power plant used for propulsion. Finally 8400 grenades, 300 man portable missiles, 1000 vehicle launched torpedoes, and miscellaneous ammunition load-outs, with 8.4, 3, 40, and 22.9 metric tons of mass respectively. Total ammunition load-out mass: 130.3 metric tons.

Combined mass of supply for a Cavalry Troop is 84 metric tons (mt) of food, 38.5 mt of power cells, and 130.3 mt of ammunition for a total of 252.8 metric tons of supplies to conduct a minimal two weeks of combat operations. Now we know how much **'stuff'** accompanies those 800 Marines and their 106 vehicles. But how does it get to the system, and how does it get to the planetary surface?

How do we move that many marines from their garrisons to the battlefront? Eight hundred marines each require 10 cubic meters of living space, and 20 cubic meters of training, dining, and recreation space. Thirty cubic meters each or 24,000 cubic meters. In addition their 106 vehicles and personal equipment take up 144 cubic meters per vehicle (and 58.08 metric tons each) and 2.12 cubic meters of equipment per marine, (the difference in equipment per marine over and above that of the Troop listed above, is the addition of bulky medical supplies, not carried at the Troop level), 15,264 and 1696 respectively and 16,960 total. Finally the above 252.8 metric tons of equipment mentioned above take up roughly 20,223 cubic meters. So the transport craft must provide 61,183 cubic meters of volume for the equipments AND the marines, massing over 6489 metric tons of equipment, supplies and marines.

The replenishment of the squadron, requires the three groups of items above: Food, Fuel and Ammo, and in addition the Squadron will need new personnel, both to replace those killed and injured, as well as those who need to be recycled from the front. While a *LeJeune* class can be used to carry the Squadron and its initial supply, it would have

to leave the combat/drop zone to pick up supplies and replacement troops. This leaves the Marine Commander two other choices for re-supply: first, another *LeJeune* class ship can be used, "borrowing" one from another Marine Brigade if possible; second, a non-combat supply vessel with proper escorts (*Defiant, Rapier,* or even *Steamrunner* classes) can be used to bring the supplies and troops from the rearward areas to the front. Minimum requirements for re-supply should be figured on travel time for the journey of the supply ship to and from the combat zone. If for instance, the journey takes one week each way, the ship will have to bring two weeks worth of combat supplies, approximately 252.8 metric tons. In addition, two weeks of combat operations will generally require 25% replacements or 50 additional marines and 6 or 7 vehicles. Thus the *LeJeune*, or the supply ship will need to carry the 1797.8 metric tons (30,223 cubic meters of volume) and the 50 marines and their vehicles.

Both the *LeJeune* and whatever supply ship that is bringing troops/supplies must be equipped with the type SM-14 Pave Invader Runabout as well as the Type 9M Marine Transport Shuttle in addition to normal Personnel and/or cargo transporters to deal with situations where transport inhibitors are actively being used by the enemy. The Pave Invaders are also ideal for the heavy lifting of multiple Armored Vehicles at a time.

Part Two tables and graphics:

Table Four: The Marine Mobile Armored Cavalry Squadron

Unit	Manpower	Equipment	Mass	Volume
Alpha Troop	200 Marines	10 Guderians 10 Smith-Webbers 5 Shandars	1532 Metric tons	13,000 Cubic Meters
Bravo Troop	200 Marines	10 Guderians 10 Smith-Webbers 5 Shandars	1532 Metric tons	13,000 Cubic Meters
Charlie Troop	200 Marines	10 Guderians 10 Smith-Webbers 5 Shandars	1532 Metric tons	13,000 Cubic Meters
Fire Support Troop	98 Marines	8 Artillery Pattons 3 Smith-Webbers 4 Shandars	911 Metric tons	11,730 Cubic Meters
Headquarters	102 Marines	3 Guderian 3 Smith-Webber 6 Shandars 4 Ambulances	982 Metric tons	10,230 Cubic Meters
Total Squadron	Marines	33 Guderians 8 Artillery Pattons 36 Smith-Webbers 25 Shandars 4 Ambulances	6,489 Metric tons	60,960 Cubic Meters

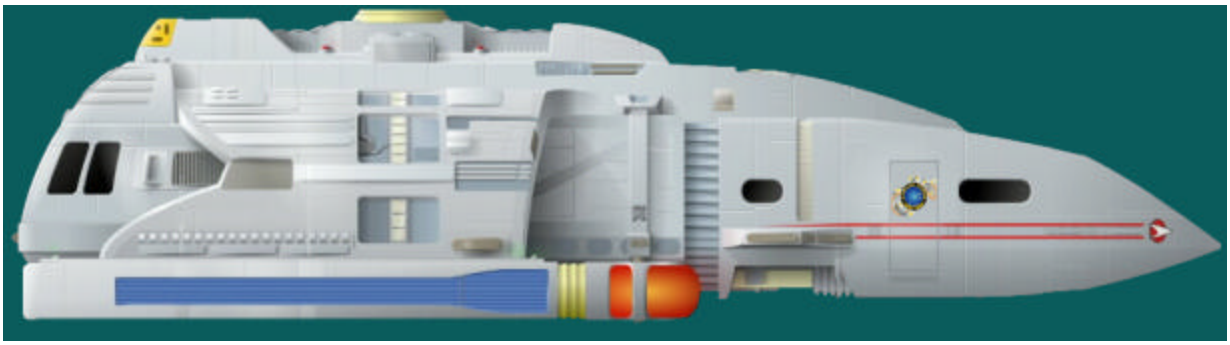
Table Five: Supply the Squadron

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	84 Metric tons	6976 Cubic Meters
Fuel	38.5 Metric tons	2967 Cubic Meters
Ammunition	130.3 Metric tons	10,280 Cubic Meters
Vehicles	6156.5 Metric Tons	16,960 Cubic Meters
The Marines themselves	80 Metric tons	24,000 Cubic Meters
Total	6489 Metric Tons	60,960 Cubic Meters

Table Six: Re-supplying and Re-manning the Squadron

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	84 Metric tons	6976 Cubic Meters
Fuel	38.5 Metric tons	2967 Cubic Meters
Ammunition	130.3 Metric tons	10,280 Cubic Meters
Vehicles	1525 Metric Tons	4000 Cubic Meters
The Marines themselves	20 Metric tons	6000 Cubic Meters
Total	1797.8 Metric Tons	30,000 Cubic Meters

Figure Two: Type MS-14 – Pave Invader Runabout



PAVE INVADER SPECIFICATIONS

Displacement	150 mt
Overall Length	24.2 m
Overall Draft	5.9 m
Overall Beam	14.5 m
Propulsion:	Two Type-II Mod III energized antimatter micro-warp drive units (System Contractor: Leeding Energies, Sydney, Earth) One Class-A subatomic unified energy impulse unit (System Contractor: Kloratis Drives, Tellar) "Trentis III-mini " pulsed laser reaction control system (System Contractor: Orage Ijek, Aksajak, Andor)
Velocity:	Warp 4.0 Standard Cruising Speed Warp 7.0 Maximum Cruising Speed Warp 8.1 Maximum Attainable Velocity for 12 hours
Duration:	6 months standard
Complement:	1-4 Officers 0-26 Passengers (Normal – Up to 30 Maximum) 1-30 Total Crew (Standard)
Embarked Craft:	2 Life-pods
Navigation	RAV / ISHAK Mod 3 Warp Celestial Guidance (System Contractor: Tlixis Ramab RRB, Coridan III)
Computers:	M-12 Multitronic Computer - Isolinear II with LCARS 2.0 interface software (System Contractor: Daystrom Computer Systems, Luna)
Phasers:	2 Type IV Phaser Array (System Contractor: HiBeam Energies, Earth)
Missiles:	2 Mark 90m Micro Torpedo Launchers (System Contractor: Loraxial, Andor)
Defense:	FSNra Primary Force Field and Integrity Field (System Contractor: Charlotte Shields, Earth)
Life Support:	MM6 Modular Gravity Unit (System Contractor: Morris Magnatronics, Palyria, Mars) AL4 Life Support System (System Contractor A'Alakon Landiss, Divallax, Andor)

PART THREE : THE MARINE MOBILE ARMORED CAVALRY REGIMENT

To determine the care, feeding and transportation of the Regiment, we will first have to define what units, personnel and equipment are contained therein. Each ACR has essentially the same inherent force structure. As normal for SFMC large-scale units, there is a headquarters detail, three maneuvering elements, and a support element, but at the ACR level, there is also an Aerospace element as well.

Joining the three Cavalry Squadrons is the Aerospace Cavalry Squadron (Air-Cav), the Fire and Support Squadron, and the Headquarters Squadron. Each Aerospace Squadron is equipped with an Aero-Scout Troop, three Aero-Attack Troops, an Aero-Transport Troop, and a Headquarters Troop. With 72 Aerospace craft of different configurations, the Air-Cav squadron is a welcome and powerful addition to the ACR.

In addition to the Air-Cav Squadron, the Fire & Support Squadron brings 36 Artillery Moduled Pattons, 12 Smith-Webbers, 6 Shandars, and 24 Puller variants carrying supplies and additional ammunition. The Headquarters Squadron has a security detail of 10 Guderians, 10 Smith Webbers, 5 Shandars, its own 7 Command Shandars, as well as 24 Smith-Webbers variants, including Ambulances, Military Police, Combat Engineers, and kitchen vehicles. In all the ACR has 452 vehicles, 72 Aerospace craft, and over 3600 Combat Marines.

How do you supply this monstrosity of a unit, and with what quantity of Food, Fuel and Ammo do you supply them? As before the second question, must be answered first. The standard is to pre-equip the Marine Unit with one weeks worth of rations and supplies, however for the Cavalry unit, which is used at greater distances, two weeks worth of rations and supplies are necessary. Each Marine in combat is expected to consume 3000-5000 calories of food and 2.5-3.75 liters of fluids a day. That much Food/Fluid will weigh on average 7.5 kilograms, or 105 kilos for the two week period per Marine, and factors out to 441 metric tons of food per Regiment.

In addition the Regiment will need to carry fuel for that period of time. It needs to be figured what the maximum amount of fuel that a regiment will use, even in combat for two weeks, if the vehicles sustain operations for 50% of each day. So that fuel cells equal to 168 hours of sustained operations for 452 vehicles AND 72 aerospace craft are required. The Guderians and Pattons require 4 cells each for 100 hours of operations, or 7 cells for each of the 193 AFVs, 1351 total (772 in the power plants, 579 in storage racks. Both the Smith-Webbers and the Shandars (as well as the Ambulances) require 2 cells each for 100 hours of operations, or 3.5 for each of the 259 IFVs, 929 total (518 in the power plants and 389 in storage racks. This means that the regiment must carry 968 additional charge packs, weighing 175 kilos each, or 169.4 metric tons per regiment, NOT counting the aerospace units. Each of the 72 aerospace vehicles will require (under the same combat constrains) 8 fuel cells, 2 of which they can carry in the power plants, 6 each will need to be stored for a total 432 in the racks, at 75.6 tons, for a total of 245 metric tons.

Ammunition supply now becomes immensely more complicated at the regimental level: as there are different types of expendable ammunition rounds (grenade, torpedoes, and rockets), different delivery modes (man carried, vehicle, and aerospace craft), and also different sizes of weapon charge packs. What is given, that each of the 3600 marines will if in a solid combat will need to change their phaser power packs every 50-100 minutes, average 75 minutes. And if in combat for 8 hours a day, every day for the two weeks (a hugely large amount of combat time), would require 6.4 power packs per day, 90 power packs for every marine – 324,000 for the entire regiment. All told between the phaser packs, grenades, man portable missiles, vehicle launched torpedoes, aerospace craft launched rockets and torpedoes, and miscellaneous ammunition load-outs; the total ammunition load-out will mass out at over 703 metric tons.

Combined mass of supply for a Cavalry Troop is 441 metric tons (mt) of food, 245 mt of power cells, and 703 mt of ammunition for a total of 1,389 metric tons of supplies to conduct a minimal two weeks of combat operations. Now we know how much **'stuff'** accompanies those 3600 Marines, their 452 vehicles, and their 72 aerospace craft. But how does it get to the system, and how does it get to the planetary surface?

How do we move that many marines from their garrisons to the battlefront? Eight hundred marines each require 10 cubic meters of living space, and 20 cubic meters of training, dining, and recreation space. Thirty cubic meters each or 108,000 cubic meters. In addition their 452 vehicles and 72 aerospace craft mass out at 26,603 metric

tons, and 81,152 cubic meters of volume. Thus the transport craft must provide 318,470 cubic meters of volume for the equipments AND the marines, massing over 28,420 metric tons of equipment, supplies and marines.

The replenishment of the regiment, requires the three groups of items above: Food, Fuel and Ammo, and in addition the Regiment will need new personnel, both to replace those killed and injured, as well as those who need to be recycled from the front. While a *Gallipoli* class can be used to carry the Regiment and its initial supply, it is also in the unique position of seamlessly separating its Primary Hull which is the ground support element of the ship, and its secondary hull can quickly return to rear areas and reload supplies and replacements. The *Gallipoli* being a larger version of the *Hubble* class is the one of the newest vessel designs in fleet inventory, and uses built to design elements throughout its hull.

The *Gallipoli* is in the unique position of being able to carry and retrieve four *Leopard II* drop ships that can, not only carry an entire troop to the surface at a time, can also an entire squadrons, two weeks supplies, or in the case of special combined operations carry a platoon of four Mechas. The *Leopard II* ships are essentially stretched versions of the *Yellowstone* class advanced technology runabouts, with reinforced shields to further protect their cargo.

For the marines on the ground, there is no better sight in orbit, then the monstrosity of the *Gallipoli* class ship, (80% larger than the old *Normandy* class vessels), and the class description **"Marine Expeditionary Transport Cruiser"** defines the power that is the *Gallipoli* perfectly.

Part Three tables and graphics:

Table Seven: Marine Mobile Armored Cavalry Regiment

Unit	Manpower	Equipment	Mass	Volume
First Squadron	800 Marines	41 Guderians/Pattons 36 Smith-Webbers 29 Shandars & Variants	6,489 Metric tons	60,960 Cubic Meters
Second Squadron	800 Marines	41 Guderians/Pattons 36 Smith-Webbers 29 Shandars & Variants	6,489 Metric tons	60,960 Cubic Meters
Third Squadron	800 Marines	41 Guderians/Pattons 36 Smith-Webbers 29 Shandars & Variants	6,489 Metric tons	60,960 Cubic Meters
Fire Support Squadron	600 Marines	60 Guderians/Pattons 12 Smith-Webbers 6 Shandars & Variants	4,485 Metric tons	48,610 Cubic Meters
Air Cavalry Squadron	720 Marines	12 Type 9S Scout 36 Type 11A Attack 12 Type 9M Transports 12 Type 9C Command	739.2 Metric tons	53,030 Cubic Meters
Headquarters	480 Marines	10 Guderian 10 Smith-Webber 24 S-W variants 12 Shandars	3,733.6 Metric Tons	33,950 Cubic Meters
Total for the Regiment	Marines	193 Guderians/Pattons 154 Smith-Webbers & Variants 105 Shandars & Variants 72 Aerospace Craft	28,420.8 Metric tons	318,470 Cubic Meters

Table Eight A: Supply the Armored Cavalry Squadron

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	84 Metric tons	6976 Cubic Meters
Fuel	38.5 Metric tons	2967 Cubic Meters
Ammunition	130.3 Metric tons	10,280 Cubic Meters
Vehicles	6156.5 Metric Tons	16,960 Cubic Meters
The Marines themselves	80 Metric tons	24,000 Cubic Meters
Total	6489 Metric Tons	60,960 Cubic Meters

Table Eight B: Supply the Fire Support Squadron

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	63 Metric tons	5232 Cubic Meters
Fuel	32.375 Metric tons	2498 Cubic Meters
Ammunition	144 Metric tons	11,360 Cubic Meters
Vehicles	4181.75 Metric Tons	11,520 Cubic Meters
The Marines themselves	60 Metric tons	18,000 Cubic Meters
Total	4485 Metric Tons	48,610 Cubic Meters

Table Eight C: Supply the Air Cav Squad

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	75.6 Metric tons	6280 Cubic Meters
Fuel	75.6 Metric tons	5836 Cubic Meters
Ammunition	108 Metric tons	8521 Cubic Meters
Vehicles	398 Metric Tons	9,792 Cubic Meters
The Marines themselves	72 Metric tons	21,600 Cubic Meters
Total	739.2 Metric Tons	52,030 Cubic Meters

Table Eight D: Supply the HQ Squadron

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	50.4 Metric tons	4187 Cubic Meters
Fuel	21.525 Metric tons	1659 Cubic Meters
Ammunition	60.175 Metric tons	4,747 Cubic Meters
Vehicles	3553.48 Metric tons	8,960 Cubic Meters
The Marines themselves	48 Metric tons	14,400 Cubic Meters
Total	3733.6 Metric Tons	33,950 Cubic Meters

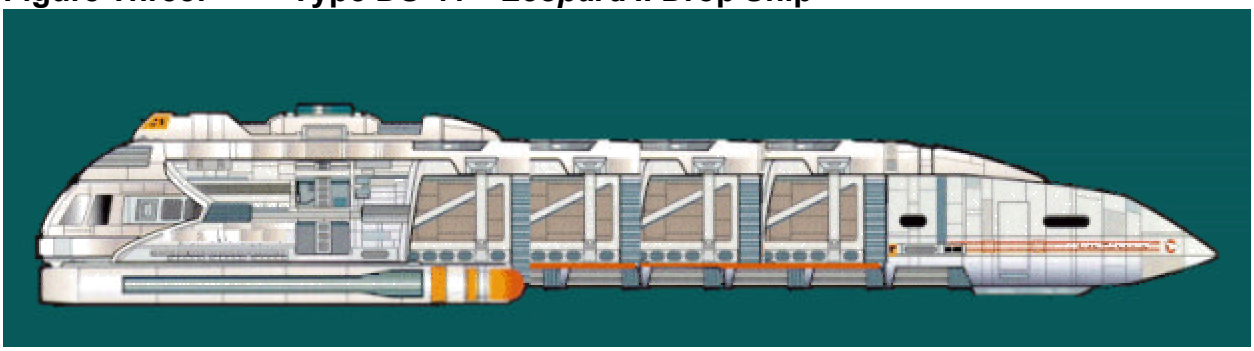
Table Eight E: Supply for the Regiment

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	441 Metric tons	36,627 Cubic Meters
Fuel	245 Metric tons	18,894 Cubic Meters
Ammunition	703 Metric tons	55,468 Cubic Meters
Vehicles	26,603 Metric tons	81,152 Cubic Meters
The Marines themselves	360 Metric tons	108,000 Cubic Meters
Total	28,420.8 Metric Tons	318,470 Cubic Meters

Table Nine: Re-supplying and Re-manning the Regiment

Category	Two Week Supply – Mass	Two Week Supply – Volume
Food	441 Metric tons	36,627 Cubic Meters
Fuel	245 Metric tons	18,894 Cubic Meters
Ammunition	703 Metric tons	55,468 Cubic Meters
Vehicles	6650 Metric Tons	20,288 Cubic Meters
The Marines themselves	90 Metric tons	27,000 Cubic Meters
Total	8133 Metric Tons	158,277 Cubic Meters

Figure Three: Type DS-41 – *Leopard II* Drop Ship



LEOPARD II SPECIFICATIONS

Displacement	310 mt
Overall Length	41 m
Overall Draft	5.9 m
Overall Beam	31 m
Propulsion:	Two Type-II Mod IV energized antimatter micro-warp drive units (System Contractor: Leeding Energies, Sydney, Earth) One Class-A subatomic unified energy impulse unit (System Contractor: Kloratis Drives, Tellar) "Trentis III-mini " pulsed laser reaction control system (System Contractor: Orage Ijek, Aksajak, Andor)
Velocity:	Warp 4.0 Standard Cruising Speed Warp 7.0 Maximum Cruising Speed Warp 7.8 Maximum Attainable Velocity for 12 hours
Duration:	3 months standard
Complement:	3-9 Officers 0-200 Passengers (Normal – Up to 30 Maximum) 3-209 Total Crew (Standard)
Embarked Craft:	12 Life-pods
Navigation	RAV / ISHAK Mod 3 Warp Celestial Guidance (System Contractor: Tlixis Ramab RRB, Coridan III)
Computers:	M-12 Multitronic Computer - Isolinear II with LCARS 2.0 interface software (System Contractor: Daystrom Computer Systems, Luna)
Phasers:	2 Type IV Phaser Array (System Contractor: HiBeam Energies, Earth) 1 Type G-aa Anti Air point Defense Phaser Mount (System Contractor: Mejii Defense Systems)
Missiles:	2 Mark 90m Micro Torpedo Launchers (System Contractor: Loraxial, Andor)
Defense:	FSNrbis Primary Force Field and Integrity Field (System Contractor: Charlotte Shields, Earth)
Life Support:	MM6 Modular Gravity Unit (System Contractor: Morris Magnatronics, Palyria, Mars) AL4 Life Support System (System Contractor A'Alakon Landiss, Divallax, Andor)

CONCLUSION

It has been show the various requirements for supply, transport and re-supply for the various sizes of units of the Marine Mobile Armored Cavalry. New ship designs, new logistical thinking, and new respect for the bean counters of the Corps have been some of the side effects of this research.

For the Cavalry Troop, we have seen that though is the high speed cutting edge of the Corps' cavalry role, it has a logistical tail like any other unit. The *Puma* sub-class that was developed to support the Cavalry Troop is not only an easy decision, (and conversion) but also a vital one. The troop can move only as far as it fuels holds up, can fight only as long as it has ammunition, and the marines can only operate if they are nourished and replacements are available. Until the end of the century, the *Puma* will roar.

For the Cavalry Squadron, a parallel analysis of the role has been shown. The Squadron is different in that it can provide its own fire support and medical relief. This beginning of self-contained combat capability, means the logistical tail must be thicker and when it is needed, must be there NOW. Doctors without medical supplies are nearly helpless, and Gunners without rounds quickly become Infantry Marines. Neither is a wise use of the investment the Federation has expended. The *LeJeune* class thus is the ideal complement, both with staying power, the ability to store additional supplies (up to four additional weeks of supplies) and the ability to transverse between rear

garrisons and the combat zone quickly, or the ability to hold station above the planet, providing support while more conventional supply ships, bring up relief.

Finally the Armored Cavalry Regiment, a massive, powerful, swift and deadly combined arm force, that brings its own supplies, air support, artillery, and medical personnel. Delivering this force to a combat drop requires an equally massive and self-supporting vessel. The *Gallipoli* class starship is rightly named an Expeditionary Transport. The four drop ships, twelve runabouts, and the squadrons of *Peregrines,* assigned to protect the ship, while the squadron of aerospace fighters assigned to protect the Regiment, make this force a mighty sword for Starfleet. In addition the Runabouts and Drop Ships can pick up and move entire Troops or even (when operated jointly) an entire Squadron from one side of the globe to the other in under an hour. An ability that makes the ACR all the ground force needed to control all but the most populated planets.

What lessons have we learned from this research that will lead us to further study of the needs of the Corps? As the Infantry thesis study of the powered armored Fire Team, led directly to an analysis of Armored Cavalry operations, and the Cavalry paper led to this analysis of moving the cavalry units. What further questions need to be asked by this paper?

First, once Starfleet has dropped the marines into a combat zone, a whole Regiment of them, how does the Corps garrison them? Under what conditions would there be a need to garrison them? How long and how permanent should that garrison be? An

analysis of this hypothetical garrison, “Fort Lakota” will be the focus of this author’s next paper dealing with construction, supply, defense, and even take down of said facility.

Secondly, providing those marines in the field or in garrison, combat medical services, either in a MASH or at a field AID station, requires careful ‘triage’ decision making. The Medical Branch manual covers this matter briefly, but when dealing with the Armored Cavalry unit, far away from traditional medical facilities, and with the Starfleet vessel sometimes being up to two weeks away, this ‘art’ known as triage must be practices expertly and quickly, LIVES do hinge on the result. Thus an analysis of Triage for the Armored Cavalry garrison and field units will be performed.

Finally, an analysis of continuing education and cross training for the line marine is needed. The ACR and its sub-units being so far from the center of the Federation, is like a starship in its needs to be able to be all things and all times. The simplest way for the Cavalry Commander to ensure this is to have his or her troops highly trained not only in their specialty, but also in the specialties of those units across the ridge, on the next continent, or the planet three stellar systems away. Thus an analysis of how the Officers in Charge at the various command levels can inspire their troops to further educates themselves will be done.

To return to the Care, Feeding and Transport of the Armored Cavalry Unit. It has been shown that it can be done effectively, using relatively available assets that Starfleet has available, and with projected greater success and increased survivability for the Marines

on the ground. Thus it is concluded that Marine Mobile Armored Cavalry concept can in itself be sound and practical as the logistical chain to support it, can and will be available.

This does require that the *Puma* class ships for the independently operating Cavalry Troops be completed and assigned, the two per Brigade currently planned for, should and need to be expanded to four or even six per Brigade. Likewise the *LeJeune* class ships will need to be completed and expanded from one per Brigade to two or even three. And finally the planned *Gallipoli* class ships must be completed, THIS latest last war is over, the Dominion is quiet, the Slobodans quiet, and the Voth have returned to the far Delta Quadrant, but what will come next, we just don't know, and an Alpha Quadrant with 20 *Gallipoli* will be safer than a Quadrant with only five, or none if the accountants have their way.

In Closing I would quote General e'Tsha Clthinia, of Andor, as he wrote in his memoirs "Andor Rising"

> "Brave Soldiers win battles, Trained Soldiers win battles, New Weapons and Technologies win battles, Expert Tactics win battles. But… It is only Logistics that wins Wars."

Appendix One:

The U.S.S. PUMA

Marine Light Transport Cruiser based on the *Jaguar* Diplomatic variant of the *Intrepid* Light Cruiser class.

Figure Four: *Intrepid* Class Light Cruiser

Part A of Appendix One-
Based on the original *Jaguar (I)* * NCC-74750 (*Intrepid* Class Variant) designs

By:

Vice Admiral Chris Wallace
Chairman – Starfleet Spacecraft Design Advisory Commission
Commanding Officer, USS *Jaguar* (I) * NCC-74750 (*Intrepid* Class Variant)

The following review of the *Jaguar* Class is taken from the "Dockyard Review" The Journal of the Advanced Starship Design Bureau, Volume Four, Issue Nine, January 2380, with permission of the editor Admiral Chris Wallace.

The *Intrepid* class has become one of the more versatile starship platforms in Starfleet since they entered service not quite a decade ago. Designed as a high-speed Explorer to support the larger *Sovereign* and *Galaxy* classes, the class' high speed and strong tactical suite made it a favorite among Starfleet Admirals and diplomats during the Dominion War.

With the huge losses Starfleet suffered during the War, emphasis is being placed on rebuilding the Fleet's strength to both enforce the peace and prevent other powers, both Major and Minor, from exploiting the Fleet's weakness. The *Intrepid* class has been chosen as the core of the new Fleet and orders for twenty new vessels have been placed to augment the original twenty.

DEVELOPMENT HISTORY

During the war, there was a need for a high-speed diplomatic courier vessel to travel between the three Allied powers. The *NOVA* class Courier was used, as was the *Cheyenne* class, both due to their high-sustained speeds thanks to their four warp nacelles. However, neither ship was designed for combat duty, and were not sent into harm's way. For those missions, *Intrepid* Exploratory Cruisers were used, due to their high speed and heavy armament.

The *Intrepid* was quite successful in this role, and after the War, Starfleet looked hard at possibly modifying one or more of the new-build *Intrepid* class vessels to true diplomatic cruiser specifications. As Chairman of the SSADC, my group was charged with preparing a proposal for such a vessel.

It was determined that the current propulsion systems aboard the *Intrepid* class were more than adequate, as the ship has one of the highest sustainable and attainable top speeds of any ship in known space.

COMPUTER SYSTEM UPDATES

The *Galaxy (II)* class vessel U.S.S. *Bright Star* was fitted with an experimental computer relay system based on "bio-neural gel packs" in addition to traditional Isolinear chips, classified as M16-Isolinear III, it utilized synthetic neurons based on the organization of neurons and synapses in the humanoid brain. The system essentially "grows" new synapses as needed. This allows the computer to take a "best guess" in cases where there is insufficient information to make a definitive statement in a logical manner, rather than having to spend the time attempting to calculate all possible actions. In essence, it uses a more intuitive process to arrive at a decision. After successful testing on the *Bright Star* the system was fitted to the *Intrepid* and other *Galaxy (II)* class starships

The *Galaxy (II)* class also added a highly advanced artificial-personality enhancement program called E.V.E. (**E**nhanced **V**isual Interfac**E**) on top of the standard LCARS software, providing enhanced

computer-human interactions. This system has been added to the USS *Jaguar* and may be fitted to future *Intrepid* class starships.

TACTICAL SYSTEM UPGRADES

The *Intrepid* class already mounts and impressive and powerful tactical suite. Nonetheless, it was decided to improve this to the latest standards. Therefore, the standard type X phaser strips have been upgraded to type XII. The two Mk 95 photon torpedo launchers are the current state of the art, and remain unchanged. She is only one of the few ships currently carrying the new quantum torpedo. CETIS Mk III with type 225TACAR (Target Acquisition Center Accelerated Response) is standard equipment.

The FSS shield system was considered, but such a system was designed for a far larger vessel and there was no way to place the shield grid generators on the hull. Therefore, the FSQ/2 system upgrade was fitted, making the vessel extremely well defended.

SHIPS FACILITIES

The *Intrepid* class is geared for exploration, and therefore has one of the most advanced sensor suites in service. The crew also carries a large Sciences compliment to support it. It was decided to leave the exploration suite alone, but to reduce the Science compliment by 25%. The reason for such a reduction is that the vessel is not expected to perform serious exploration and scientific missions.

The reduction in Sciences crew has been transferred to a new Diplomatic Support team, which will handle diplomatic-related duties. In addition, twenty large VIP quarters have been added, as well as five meeting rooms – one large, two medium, and two small. The ship's gallery has undergone extensive refitting and enlargement, so as to handle diplomatic functions.

CONSTRUCTION HISTORY

Though she was slated to be the last of the new vessels built, it was decided to choose the USS *Jaguar* (CE 74750) as the platform to modify. That way, should the new class be successful, *Jaguar* can become a new sub-class and future models can be numbered sequentially after her.

The vessel was started in January of 2378 in the Hakon Dockyards around Galena. Through a herculean effort by the Hakon workers, the ship was completed in late October of 2379. She is currently undergoing shakedown trials and PSA.

CONCLUSION

Jaguar is scheduled to enter service with the Diplomatic Corps in January of 2380. Her first assignment will be with the Fifth Fleet and it is expected the ship will operate out of Space dock Nexus in the Galena system while the design is reviewed and tested. I have been asked to command the vessel during her first year of trials and development.

SPECIFICATIONS

Displacement	750,000mt	
Overall Length	343 m	
Overall Draft	66 m	
Overall Beam	133 m	
Propulsion	Two LF-45 Mod1 energized antimatter warp drive units	
	(System Contractor: Leeding Energies, Sydney, Earth)	
	One FIG-4 subatomic unified energy impulse unit	
	(System Contractor: Kloratis Drives, Tellar)	
	QASR-2 particle beam maneuvering thrusters	
	(System Contractor: Scarbak Propulsion Systems, Earth)	
	"Trentis IV" pulsed laser reaction control system	
	(System Contractor: Orage Ijek, Aksajak, Andor)	
Velocity:	Warp 9.0	Standard Cruising Speed
	Warp 9.975	Maximum Cruising Speed
	Warp 9.98	Maximum Attainable Velocity
Duration:	5 years standard	
Complement:	31	Officers
	10	Diplomatic Support
	100	Enlisted Crew
	0	Passengers (Normal – Up to 30 Maximum)
	141	Total Crew (Standard)
Embarked Craft:	1	*Aerowing* type Runabout
	2	Type 6 Personnel Shuttle

	0	Type 7 Personnel Shuttle
	0	Type 9A Cargo Shuttle
	4	Type 16 Shuttle pod
Navigation	RAV / ISHAK Mod 3 Warp Celestial Guidance (System Contractor: Tlixis Ramab RRB, Coridan III)	
Computers:	M-16 Bio-Neural Gel Pack-Isolinear III with LCARS 2.5 interface software (System Contractor: Daystrom Computer Systems, Luna)	
Phasers:	5 Type XII Collimated Phaser Array (System Contractor: HiBeam Energies, Earth)	
Missiles:	2 Mark 95 Quantum Torpedo Launchers (System Contractor: Loraxial, Andor)	
Defense:	FSQ/2 Primary Force Field (System Contractor: Charlotte Shields, Earth)	
Life Support:	MM6 Modular Gravity Unit (System Contractor: Morris Magnatronics, Palyria, Mars)	
	AL4 Life Support System (System Contractor A'Alakon Landiss, Divallax, Andor)	

Figure Five: *Jaguar* Class Diplomatic Cruiser, USS Jaguar (Intrepid Sub-Class)

Part B of Appendix One-
The *PUMA* variant of the original *Jaguar* (I) * NCC-74750 (*Intrepid* Class Variant) designs.

By:
Lt. General Scott A. Akers
Director: Office of Fleet Historian
Regional Coordinator, Region Five
Commanding Officer, USS *Jaguar* (II) * NCC-74750 (*Akira* Class Variant)

Following the Dominion War, the Slobodan Police Action and the Voth Incursion, the Starfleet Marine Corps and Starfleet decided that with the development of the Marine Mobile Armored Cavalry units (troops, squadrons, and regiments) that equally mobile platforms must be made ready and available to the SFMC. To be manned by Starfleet personnel, but held in semi-garrison duty, these vessels would be able to pick up their assigned marine contingents, already being pre-loaded with vehicles, equipment, and supplies, and head for the combat zone, within ONE HOUR of an alert arriving at the ship and the marine HQ.

Several platform designs were looked at, and it was decided that except for the largest unit, the regiment, that existing platforms would be used and converted to marine use. In both case, the *Intrepid/Jaguar* platform for the Cavalry Troop, and the *Akira* platform for the Cavalry Squadron this conversion was actually quite minimal.

DEVELOPMENT HISTORY

Following the Slobodan Policing Action and "Humanitarian" relief of the Eulogian planets, The USS *Jaguar* showed that it was also an ideal platform for small-scale Marine operations. While the commanding officer of the Federation operations within the Slobodan/Eulogian territories, Admiral Hillary Cartier, used the *Jaguar* as her mobile headquarters with much success. It was the use that the Executive Officer, Lt. General Scott A. Akers, put the ship through that inspired ASDB design teams to consider yet another role for the *Intrepid* space platform.

The *Puma* will follow on those lessons learned by General Akers and his troops. During the fast action and hard-hitting ground actions against Slobodan forces, it became quickly evident that the Marines on the ground had to move fast, and be transported from one front to another even faster. Akers using tactics first developed by General Ralph Smith-Webber over a century before, re-equipped his forces with both faster power armor, and anti-air weapons. The Slobodans fought tenaciously but in the end did not have the weapons, tactics, or determination of the SFMC. *Jaguar's* ability to pick up and move Akers and his marines across the planetary surface of the Slobodan home world, meant that a) the Marines were a mobile and far reaching threat that tied down nearly ½ of the Slobodan ground forces, giving breathing room for the Eulogian underground, and 2) meant that the combat phase of the operation was finished quickly and with less loss of life than a drawn out operation would have cost.

In addition before and after the Voth incursion, General Akers was the SFMC representative on the engineering team that went over the USS *Voyager* after she had returned from the Delta Quadrant. His suggestions on weapons and defenses enhancements were also implemented into the *Puma* class, as she was being designed and built.

COMPUTER SYSTEM UPDATES

Like the *Jaguar* sub-class before it, the *Puma* will carry the now reliable and tested computer relay system based on "bio-neural gel packs" in addition to traditional Isolinear chips, classified as M16-Isolinear III, it still utilizes synthetic neurons based on the organization of neurons and synapses in the humanoid brain. The system essentially "grows" new synapses as needed. This allows the computer to take a "best guess" in cases where there is insufficient information to make a definitive statement in a logical manner, rather than having to spend the time attempting to calculate all possible actions. In essence, it uses a more intuitive process to arrive at a decision. However, the advanced artificial-personality enhancement program called E.V.E. (**E**nhanced **V**isual Interfac**E**) previously overlaid on top of the standard LCARS software, providing enhanced computer-human interactions has been deleted in exchange for a less

"cantankerous" system called A.I.D.E. (**A**rtificial **I**ntelligence **D**etermination **E**nhancement). While some kinks still remain to be straightened out, the system is less likely to override the command team over decisions during combat situations. This system has been added to the USS *Puma* and her classmates as well as being back fitted to *Akira/LeJeune* class starships.

TACTICAL SYSTEM UPGRADES

The *Jaguar* like the *Intrepid* class before it already mounted and impressive and powerful tactical suite. This included the type XII phaser strips as well as the two Mk 95 photon torpedo launchers carrying the reliable battle-tested quantum torpedo. CETIS Mk III with type 225TACAR (Target Acquisition Center Accelerated Response) is standard equipment. In addition the *Jaguar* sub class carried the FSQ/2 system upgrade was fitted, that despite its small size (ideal for the *Intrepid* platform) made the vessel extremely well defended.

The *Puma* class with advancements from the lessons learned from the first *Jaguars* missions, and the technology brought back by the *Voyager* was upgraded in many key areas. The *Puma* will be taking its marine troop into a variety of hostile situations, and will be required to loiter over a planet, that will presumably be hostile, or having hostile factions with planetary defense systems or interdiction space craft. Thus the ship will need to defend itself and extend that protection to the marines as they land, operate, and are recovered.

The *Puma* class ships then, will retain the powerful type XII phaser strips but will also include 10 type IV-G point defense phaser mounts situated around the primary and engineering hulls to protect against both missile and suicide shuttle attacks. The two Mk 95 launchers will be upgraded to the Mk98rf, rapid firing launchers, while still carrying the powerful quantum torpedoes, will also carry the lesser technology photon torpedoes and EMP burst torpedoes. The CETIS Mk III type 225TACAR system will be retained in its entirety since both the system and the *Intrepid* platforms were designed around each other. Finally the *Pumas* will be one of two sub-classes that will integrate the active Photonic Ablative Armor system,

with their existing shields, in this case the FSQ/2 shield system. This device brought back by the USS *Voyager* when they returned from the Delta Quadrant, along with other technology will allow Federation ships to endure more punishment, while remaining on station to support their missions, or in the *Puma's* case their debarked marines.

SHIPS FACILITIES

While the *Intrepid* class is geared for exploration, and the *Jaguar* for Diplomatic Support, the *Puma* exists to transport Marines into harm's way. The diplomatic suites have been removed and replaced with barracks for the 200 marines troopers and their officers. In addition the holo-decks have been reconfigured for training missions and scenarios for the marines, and the crew entertainment areas have been enlarged (and reinforced) for the larger number of personnel. The storage areas have also been reinforced to carry the 25 vehicles and the landing crafts the Marines are using. Also larger, more powerful transporters have been installed for moving the marines to the surface, when that option is available.

CONSTRUCTION HISTORY

Though she was slated to be the 26th and last of the *Jaguar* class vessels built, it was decided to choose the USS *Puma* (CE 74775) as the platform to modify. That way, should the new class be successful, *Puma* can become a new sub-class and future models can be numbered sequentially after her.

The lead vessel was started in January of 2382 in the Utopia Planetia Dockyards around Mars. In August of 2383, the Marine Transport modifications were added and the ship was launched on January 3rd, 2384 for its maiden voyage. She is currently undergoing shakedown trials and PSA, with the Long Lances Troop of the First Cavalry Squadron of the First Marine Brigade in Region One. Eventually 40 *Pumas* will be built, and a follow on variant is expected when the class is completed in 2394.

CONCLUSION

The *Puma* class is scheduled to enter service with the Starfleet Marine Corps in January of 2385. Her first assignment will be with the lead off test units assigned as Marine Mobile Cavalry Troops in each of the Regions. Eventually, the goal is to build two *Pumas* for each Region/Fleet to provide support for each of the *LeJeune* class ships that will be assigned. This will give the Brigade Commander and the Regional Coordinator more flexibility in dealing with situations require a rapid response ground unit, throughout their spatial areas of responsibility. In addition each of these ships can be reassigned to Marine Expeditions as needed to provide support for large scale Regimental or even Brigade level operations. But the strength of the *Puma* class will not be in support of the larger Marine Hammer, but in the ability to deliver a Marine scalpel like attack in surgical strikes through the Federation and beyond.

SPECIFICATIONS

Displacement	750,000mt	
Overall Length	343 m	
Overall Raft	66 m	
Overall Beam	133 m	
Propulsion	Two LF-45 Mod1 energized antimatter warp drive units	
	(System Contractor: Leeding Energies, Sydney, Earth)	
	One FIG-4 subatomic unified energy impulse unit	
	(System Contractor: Kloratis Drives, Tellar)	
	QASR-2 particle beam maneuvering thrusters	
	(System Contractor: Scarbak Propulsion Systems, Earth)	
	"Trentis IV" pulsed laser reaction control system	
	(System Contractor: Orage Ijek, Aksajak, Andor)	
Velocity:	Warp 9.0	Standard Cruising Speed
	Warp 9.975	Maximum Cruising Speed
	Warp 9.98	Maximum Attainable Velocity
Duration:	5 years standard	
Complement:	31	Officers
	100	Enlisted Crew
	10	Diplomatic Support
	200	Marine Detachment
	341	Total Crew and Passengers (Standard)
Embarked Craft:	1	Type MS-15 *Pave Invader* Runabouts
	2	Type 6 Personnel Shuttle
	6	Type 9M Marine Transport Shuttles
	4	Type 16 Shuttle pod
Navigation	RAV / ISHAK Mod 3 Warp Celestial Guidance	
	(System Contractor: Tlixis Ramab RRB, Coridan III)	
Computers:	M-16 Bio-Neural Gel Pack-Isolinear III with LCARS 2.5 interface software	
	(System Contractor: Daystrom Computer Systems, Luna)	

Phasers:	5 Type XII Collimated Phaser Array (System Contractor: HiBeam Energies, Earth) 10 Type G point Defense Phaser Mounts (System Contractor: Mejii Defense Systems)
Missiles:	2 Mark 98rf Rapid Fire Multi-Load Torpedo Launchers (System Contractor: Loraxial, Andor)
Defense:	FSQ/2 Primary Force Field (System Contractor: Charlotte Shields, Earth) Photonic Ablative Armor System (System Contractor, Starfleet Labs, SFHQ.)
Life Support:	MM6 Modular Gravity Unit (System Contractor: Morris Magnatronics, Palyria, Mars) AL4 Life Support System (System Contractor A'Alakon Landiss, Divallax, Andor)

Figure Five: *Puma* Class Marine Transport Light Cruiser

Appendix Two:

The U.S.S. LeJeune

Marine Heavy Transport Cruiser based on the *Akira* Battle Cruiser class.

Figure Six: *Akira* Battle Cruiser

Part C of Appendix Two-
Based on the original *Akira* class designs

By:
Rear Admiral Alex Jaeger
Senior Designer
Starfleet Spacecraft Design Advisory Commission

The following review of the Akira Class is taken from the "Dockyard Review" The Journal of the Advanced Starship Design Bureau, Volume Four, Issue One, April 2363, with permission of the editor Admiral Chris Wallace.

When development began on the *Galaxy* and *Nebula* class explorers, Starfleet also started work on a new generation of combat-oriented ships to augment the *Excelsior* and *New Orleans* class ships serving those roles. While the Romulans had gone "missing" and the Klingons were unusually quiet, Starfleet knew that in the event of a serious Threat power, TacFleet was ill equipped to engage them. While the *Steamrunner* class destroyer and *Saber* class scout/escort were in Fleet service at the time, they had been designed to free the *Excelsior* and *Ambassador* classes from being called upon to deal with smaller issues. The *Ambassador's* still formed the backbone of the Fleet's response to serious military threats. The *Galaxy* and *Nebula* classes were expected to do the same, but it was feared that, like the *Ambassador* class, they'd be called upon too much to handle smaller crises.

The Starfleet Spacecraft Design Advisory Commission started the *Akira* class Starship Development Project in 2355 to begin to address the need of an extremely well armed ship with excellent survivability. Though this went against the general tenet of Starfleet, with the *Galaxy* class preparing to travel to unexplored parts of the Federation and beyond, Starfleet worried about possible disastrous first-contacts like had happened with the Klingon and Romulan Empires.

This decision took on greater importance with the start of the Cardassian War in 2356. The *Ambassador* Class was seriously stretched, and the lack of photon-torpedo launchers on *New Orleans* class proved a serious flaw. The tactical suite on the *Akira* was heavily enhanced to reflect this (see Tactical Systems, below).

GENERAL APPEARANCE

The *Akira* class utilizes a unique catamaran-style shape that allows both high-speed and a low sensor profile. A roll bar atop the rear houses most of the torpedo launchers. The bridge, as opposed to almost every other starship, is nestled between two raised areas on the upper saucer, protecting it from enemy fire.

PROPULSION AND POWER SYSTEMS

Though designed for the larger *Galaxy* and *Nebula* classes, it was decided to fit the LF-41 warp drive to the *Akira* class to both provide speed and a ready power supply for the photon torpedo launchers.

TACTICAL SYSTEMS

Not since the old *Andor* class missile cruiser has a starship packed so many photon torpedo launchers into a hull. The *Akira* mounts six Type X phaser strips and a total of fifteen Mk 80 photon torpedo launchers. Three are mounted just above the sensor dish, one more just below it, eight are located in the

upper roll bar, and two more are each located port and starboard on the saucer. The *Akira* is capable of delivering a killing blow with a single salvo against all known Threat starships as well as inflicting damage to ships on either side as it passes through formations. The *Akira* also mounts six Type X phaser strips. The ship carries the FSQ shield system and the CETIS Mk III with Type 225 TACAR fire-control suite.

The *Akira* class was designed to carry fighters, and has a through-deck hangar bay designed for this purpose. The forward bay is equipped with launching facilities, and the two rear-bays are equipped for retrieval. Standard compliment is twelve *Peregrine* class fighters, though more can be carried if necessary.

COMPUTER SYSTEM

The *Akira* carries the standard M-14 Isolinear II found on most ships of the line at her time. There has been talk of upgrading to the M-15 Isolinear III with LCARS, but a lack of available space, as well as no concrete need, has so far placed those plans on hold.

SHIPS FACILITIES

For her size, the *Akira* class carries a large crew of 500. Most of the ship's staterooms are of the dual-type, maximizing living space while still offering privacy. SSDAC learned from the mistakes in the *Steamrunner* class and fitted a much more advanced scientific and diplomatic suite on the *Akira* class. Though not as advanced as those found on the *Galaxy*, it does give the *Akira* a multi-mission capability not found in the *Steamrunner* class.

DEVELOPMENT AND CONSTRUCTION HISTORY

The *Akira* class was approved for construction in 2358, with ten hulls being laid down. The *Akira* entered Fleet service in 2361, with the others following over the next three years. Starfleet has instituted a

massive shipbuilding program based around the *Akira*. By 2364 thirty-five vessels are expected to be in service, with production set at five per year for the next ten years.

SPECIFICATIONS

Displacement:	1,050,000 mt
Overall Length:	455 m
Overall Draft:	83 m
Overall Beam:	292 m
Propulsion:	Two LF-35 Mod 1 energized-energized antimatter warp drive units (System Contractor: Shuvinaaljis Warp Technologies, Vulcan) Two FIG-4 subatomic unified energy impulse unit (System Contractor: Kloratis Drives, Tellar) QASR-2 particle beam maneuvering thrusters (System Contractor: Scarbak Propulsion Systems, Earth) "Trentis IV" pulsed laser reaction control system (System Contractor: Orage Ijek, Aksajak, Andor)
Velocity:	Warp 7.000 Standard Cruising Speed Warp 9.000 Maximum Cruising Speed Warp 9.800 Maximum Attainable Velocity
Duration:	5 years, standard
Complement:	100 Officers 400 Enlisted Crew 50 Marines 0 Passengers (Normal – Up to 50 Maximum) 500 Total Crew (Standard)
Embarked Craft:	12 *Peregrine* Class Fighters 4 Type 6 Personnel Shuttle 4 Type 7 Personnel Shuttle 2 Type 9A Cargo Shuttle 6 Type 16 Shuttle pod
Navigation:	RAV / ISHAK Mod 3 Warp Celestial Guidance (System Contractor: Tlixis Ramab RRB, Coridan III)
Computers:	M-14 Isolinear II with LCARS 2.0 interface software (System Contractor: Daystrom Computer Systems, Luna)
Phasers:	6 Type X Collimated Phaser Array (System Contractor: HiBeam Energies, Earth)
Missiles:	15 Mk 80 Quantum Torpedo Launchers (System Contractor: Loraxial, Andor)
Defense:	FSQ Primary Force Field (System Contractor: Charlotte Shields, Earth)
Life Support:	NAG2 Modular Gravity Unit (System Contractor: New Amsterdam Gravitics, New Amsterdam, Alpha Centauri III) AL3 Life Support System (System Contractor: A'Alakon Landiss, Divallax, Andor)

Part D of Appendix Two-
The *LeJeune* variant of the original *Akira* class designs

By:

Lt. General Scott A. Akers
Director: Office of Fleet Historian
Regional Coordinator, Region Five
Commanding Officer, USS *Jaguar* (II) * NCC-74750 (*Akira* Class Variant)

Following the Dominion War, the Slobodan Police Action and the Voth Incursion, the Starfleet Marine Corps and Starfleet decided that with the development of the Marine Mobile Armored Cavalry units (troops, squadrons, and regiments) that equally mobile platforms must be made ready and available to the SFMC. To be manned by Starfleet personnel, but held in semi-garrison duty, these vessels would be able to pick up their assigned marine contingents, already being pre-loaded with vehicles, equipment, and supplies, and head for the combat zone, within ONE HOUR of an alert arriving at the ship or marine HQ.

Several platform designs were looked at, and it was decided that except for the largest unit, the regiment, that existing platforms would be used and converted to marine use. In both case, the *Intrepid/Jaguar* platform for the Cavalry Troop, and the *Akira* platform for the Cavalry Squadron this conversion was actually quite minimal.

DEVELOPMENT HISTORY

Following the Slobodan Policing Action and "Humanitarian" relief of the Eulogian planets, it was decided that the *Akira* class was the ideal platform for large-scale Marine operations. While often used for marine operations during the Dominion War, none of the *Akiras* were available or prepared to be used in the lightning strikes needed during the Slobodan actions. It was decided by Lt. General Scott A. Akers, to put the class through the same *Jaguar* inspired modifications and create a new *Akira* platform, namely the *Lejeune* class, named after US Marine Corps Commandant Lt. General John Archer LeJeune, considered to the father of Marine Amphibious Warfare for his theoretical, doctrinal, and practical developments on behalf of the US Marine Corps between the First and Second World Wars or Earth in the early 20th century.

The *LeJeune* will follow on those lessons learned by General Akers and his troops. During the fast action and hard-hitting ground actions against Slobodan forces, it became quickly evident that the Marines on the ground had to move fast, and be transported from one front to another even faster. Akers using tactics first developed by General Ralph Smith-Webber over a century before, re-equipped his forces with both faster power armor, and anti-air weapons. The Slobodans fought tenaciously but in the end did not have the weapons, tactics, or determination of the SFMC. *Jaguar's* ability to pick up and move Akers and his marines across the planetary surface of the Slobodan home world, meant that a) the Marines were a mobile and far reaching threat that tied down nearly ½ of the Slobodan ground forces, giving breathing room for the Eulogian underground, and 2) meant that the combat phase of the operation was finished quickly and with less loss of life than a drawn out operation would have cost.

In addition before and after the Voth incursion, General Akers was the SFMC representative on the engineering team that went over the USS *Voyager* after she had returned from the Delta Quadrant. His suggestions on weapons and defenses enhancements were also implemented into the *LeJeune* class, as she was being designed and built.

COMPUTER SYSTEM UPDATES

Unlike the original *Akira* class ships, the *LeJeune* ships will be upgrading to the same tested computer relay system based on "bio-neural gel packs" in addition to traditional Isolinear chips used on the *Puma* class ships. Classified as M16-Isolinear III, it still utilizes synthetic neurons based on the organization of neurons and synapses in the humanoid brain. The system essentially "grows" new synapses as needed. This allows the computer to take a "best guess" in cases where there is insufficient information to make a definitive statement in a logical manner, rather than having to spend the time attempting to calculate all possible actions. In essence, it uses a more intuitive process to arrive at a decision. The Lejeune ships will also carry the A.I.D.E. program internal to the computer system (**A**rtificial **I**ntelligence **D**etermination).

Enhancement). While some kinks still remain to be straightened out, the system is less likely to override the command team over decisions during combat situations, then the older E.V.E. system.

TACTICAL SYSTEM UPGRADES

The *Akira* already mounted an impressive and powerful tactical suite. This included the six of the type X phaser strips as well as the fifteen (FIFTEEN) Mk 80 torpedo launchers carrying the reliable battle-tested quantum torpedo. The ship carries the FSQ shield system and the CETIS Mk III with Type 225 TACAR fire-control suite as standard equipment. However with advances in technology and weaponry it was decided to upgrade both the weaponry and the shielding for the new class. The six phaser arrays were upgraded to type XII. In addition the *LeJeune* will carry 20 type IV- G point defense phaser mounts situated around the primary and engineering hulls to protect against both missile and suicide shuttle attacks. Finally, the torpedo launchers were all upgraded to the Mk98rf, rapid firing launchers, while still carrying the powerful quantum torpedoes, will also carry the lesser technology photon torpedoes and EMP burst torpedoes. Finally the *LeJeunes* will be one of two sub-classes that will integrate the active Photonic Ablative Armor system, with their existing shields; in this case the new FSS shield system.

Like the *Akira* class the *LeJeune* is designed to carry fighters, and has a through-deck hangar bay designed for this purpose. The forward bay is equipped with launching facilities, and the two rear-bays are equipped for retrieval. Standard compliment is twelve *Peregrine* class fighters, six *Pave Invaders*, and twenty-four Type 9M Marine transport shuttles.

SHIPS FACILITIES

For her size, the *LeJeune* class carries a large crew of 500, while still providing large quantity of berthing, storage, and training space for the 800 marines assigned to the Mobile Armored Cavalry Squadron, it is designed to carry. While most of the ship's staterooms are of the dual-type, maximizing living space while still offering privacy, the marine enlisted personnel have insisted on remaining in

Barracks modules. Like its predecessor the *LeJeune retains the* advanced scientific and diplomatic suite on the *Akira* class. Though not as advanced as those found on the *Galaxy*, it does give the *LeJeune* an intelligence gathering and analysis capability that both surprises and pleases the Marine Commanders on the ground.

CONSTRUCTION HISTORY

The lead vessel was started in April of 2383 in the Utopia Planetia Dockyards around Mars with the Marine Transport modifications built integral to the hull, and the ship was launched on March 18th, 2384 for its maiden voyage. She is currently undergoing shakedown trials and PSA, with the Eighth Cavalry Squadron of the Eighth Marine Brigade in Region One. Eventually 20 *LeJeunes* will be built, and a follow on variant is expected when the class is completed in 2394.

CONCLUSION

The *LeJeune* class is scheduled to enter service with the Starfleet Marine Corps in March of 2385. Her first assignment will be with the lead off test units assigned as Marine Mobile Cavalry Squadrons in each of the Regions. Eventually, the goal is to build two *Pumas* for each Region/Fleet to provide support for each of the *LeJeune* class ships that will be assigned. This will give the Brigade Commander and the Regional Coordinator more flexibility in dealing with situations require a rapid response ground unit, throughout their spatial areas of responsibility. In addition each of these ships can be reassigned to Marine Expeditions as needed to provide support for large scale Regimental or even Brigade level operations. But the strength of the *LeJeune* class will not be as part of a multi-vessel expedition, but in the ability to deliver a deadly hammer blow to those who dare attack the Federation.

SPECIFICATIONS

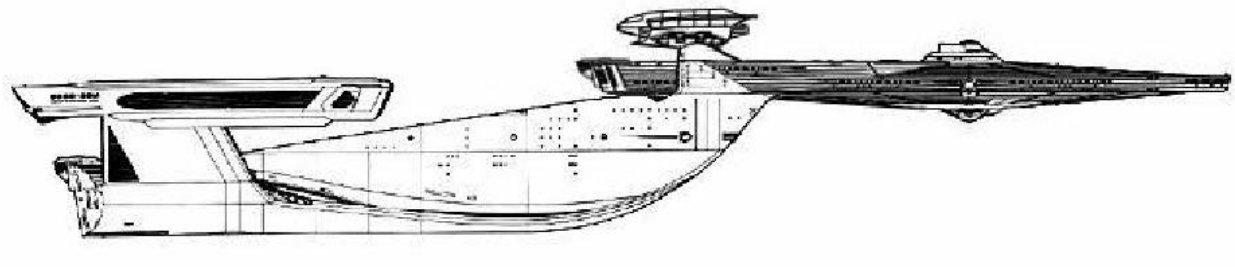
Displacement:	1,050,000 mt
Overall Length:	455 m
Overall Draft:	83 m
Overall Beam:	292 m
Propulsion:	Two LF-35 Mod 1 energized-energized antimatter warp drive units (System Contractor: Shuvinaaljis Warp Technologies, Vulcan) Two FIG-4 subatomic unified energy impulse unit (System Contractor: Kloratis Drives, Tellar) QASR-2 particle beam maneuvering thrusters (System Contractor: Scarbak Propulsion Systems, Earth) "Trentis IV" pulsed laser reaction control system (System Contractor: Orage Ijek, Aksajak, Andor)
Velocity:	Warp 7.000 Standard Cruising Speed Warp 9.000 Maximum Cruising Speed Warp 9.800 Maximum Attainable Velocity
Duration:	5 years, standard
Complement:	100 Officers 400 Enlisted Crew 800 Marines 0 Passengers (Normal – Up to 50 Maximum) 1300 Total Crew (Standard)
Embarked Craft:	12 *Peregrine* Class Fighters 4 Type 6 Personnel Shuttle 4 Type 7 Personnel Shuttle 2 Type 9A Cargo Shuttle 5 Type 16 Shuttle pod 24 Type 9M Marine transport Shuttle 6 Type MS-15 *Pave Invader* Runabouts
Navigation:	RAV / ISHAK Mod 3 Warp Celestial Guidance (System Contractor: Tlixis Ramab RRB, Coridan III)
Computers:	M-16 Bio-Neural Gel Pack-Isolinear III with LCARS 2.5 interface software (System Contractor: Daystrom Computer Systems, Luna)
Phasers:	6 Type XII Collimated Phaser Array (System Contractor: HiBeam Energies, Earth) 20 Type G point Defense Phaser Mounts (System Contractor: Mejii Defense Systems)
Missiles:	15 Mk 98rf Rapid Fire Multi-Load Torpedo Launchers (System Contractor: Loraxial, Andor)
Defense:	FSS Primary Force Field (System Contractor: Charlotte Shields, Earth) Photonic Ablative Armor System (System Contractor, Starfleet Labs, SFHQ.)
Life Support:	NAG2 Modular Gravity Unit (System Contractor: New Amsterdam Gravitics, New Amsterdam, Alpha Centauri III) AL3 Life Support System (System Contractor: A'Alakon Landiss, Divallax, Andor)

Appendix Three:

The U.S.S. GALLIPOLO

Marine Expeditionary Transport Cruiser follow-on version of the *Normandy* Super Carrier class.

Figure Seven: *Normandy* Class Super Carrier



Part E of Appendix Three-
Based on the original *Normandy* class designs

By:

Major General Les Rickard
Commander, Second Marine Expeditionary Group
Commanding Officer – USS *Normandy* * NCC-36000

The following review of the Normandy Class is taken from an archived UFPToday Subspace Wire Service dated 29 March 2310, and from Normandy ship archives. With permission of Fleet Admiral Les Rickard for use of material.

Normandy Class Development Project
PRESS RELEASE
Subject: STARFLEET Launches New Class of Ship
"STARFLEET Launches New Class of Ship"
[UFPToday Wire San Francisco]

Starfleet announced today the pending launch of its newest and largest vessel yet. Sources at both Starfleet Operations and the San Francisco Orbital Yards were quoted as saying that the new class "is the largest, most versatile vessel we have laid a keel for in some time."

Admiral Alex Rosenzweig, Director for the Starfleet Department of Technical Services (DTS), which oversees the planning and development of all Starfleet Vessels, noted that the new vessel is an achievement in multi-mission operations. "The new *Normandy* Class Supercarrier is capable of deploying a Brigade of Starfleet Marines or dropping a full rescue and reclamation contingent in the event of a disaster. She can be outfitted at Starbase 1 for a variety of mission protocols."

In speaking with Cmdr John Harris, head of the Advanced Starship Design Bureau, we determined that this was a very complex development that took place over a number of years. "It was and still is classified as to its capabilities and its compliment. However, I can say that it has the capability to transport a large number of personnel and equipment to any corner of the Federation." noted Cmdr Harris.

The Normandy has done its outfitting and test bed operations at classified locations as well as in the 12th Fleet. However its deployment and homeport will be with the 1st Fleet to allow for action throughout the Federation. It is rumored that Carrier Air Wing One, the first multi-mission and branch Aerospace wing of its kind, will be deployed aboard the *Normandy*. The primary crew compliment will be made up of elements of the 1st Brigade of the Starfleet Marine Corps. This may include Marine Fighter and Strike Squadrons as well as other elements of the SFMC.

USS *Normandy* NCC-36000, the new Normandy Class Supercarrier, will launch from the Orbital Yards at Starbase 12 on 17 April 2310 for her trial runs. Present will be Commander Starfleet, Chief of Starfleet Operations, Commanding Officer of the 12th Fleet and other Starfleet Officials.

The new ship will arrive at the San Francisco Orbital Dock where she will await her official commissioning ceremony on 6 June 2310. This date is significant in mid 20th Century history. This was the date of the allied landing on the beaches of Normandy France, the turning point in Earth's second "World War". Many descendants of those who fought in that conflict, the largest invasion of that type in the 20th Century will be in attendance at the official launching of this vessel into service.

A Starfleet Official, while making a statement to the Federation Council on its deployment, commented on the Ships Motto, Vincit Qui Patitur or He who endures, conquers.

"He who endures, conquers. That is embedded in its commissioning plaque. That quote says everything about this vessel and its capabilities. Regardless of the mission of this vessel it is designed to endure many stresses, many hardships and come out victorious. Starfleet is about exploration, contact and, yes, defense. We have a vessel here that can, in a minimum amount of time, deploy for a military or peacekeeping mission. It can defend a Federation world or provide it with disaster relief operations - the best of both worlds."

PROJECT OVERVIEW

As you are well aware on 4 July 2290 the Normandy Class Development Project (NCDP) was born. This was the beginning of the development and eventual deployment of the Normandy Class Supercarrier. A Marine capital ship designed to deploy a brigade strength Marine force in the event of hostile action requiring the combined branches now seeing service with the Starfleet Marine Corps (SFMC). Through the pressure from the Federation Security Council, based in part on information from Starfleet Intelligence and other sources, this vessel was deemed a necessity and priority in the coming decade. Especially with contact with races like the Cardassians who are, at best, cordial but warlike becoming commonplace. Add that to the rising Romulan fervor over the (Still shaky and dubious) Federation Alliance with the Klingons following the Khitomer Accords.

Due to the sensitive nature of this class and its eventual deployment it was decided that its entire development and construction process would not take place at an open facility. It would be housed in a restricted part of Starfleet 's SOL Weapons Proving Grounds referred to by the few who know of its existence as "The Rock". "The Rock" is a little known ship development and construction facility within the SOL Asteroid belt adjacent to the Weapons Proving Grounds.

DESIGN NOTES

The NCDP began by evaluating what direction the design would take. Should it be comprised entirely of a ground up new hull design or should it utilize existing hulls? After some discussion, disagreement and arguments by design techs and the Office of the Advanced Starship Design Bureau it was agreed upon that the latter was the best approach.

Having reached this conclusion then design team had to consider the multi-purpose roll this vessel would take on. It should be able to deploy not only ground units through auxiliary craft but drop a large "Beachhead" or landing force planet side within a short period of time. To do so it was determined that the best way to accomplish this goal was to use Drop Ships. A Drop Ship is a large auxiliary craft embarked by docking to the external of the vessel. This vessel is docked in a "ring" that places part of it in an enclosed area for loading and unloading. The vessel also needs to have sufficient space to accommodate the added personnel, equipment and etc. Finally it should have space to accommodate the SFMC "air" assets as well as support craft and other auxiliary craft necessary for the maintenance of the vessel.

So having all of this in mind it was clear that the vessel was going to be monstrous in size. But it also had to have some versatility in both the primary and secondary hulls. After discussion and endless simulations it was determined the best mating of hulls would be the current primary hull used by the *Kirov* Class Frigate and the secondary hull of the *Ariel* Class Carrier. These two hulls matched up with the warp stress tests as well as passing the necessary warp dynamics to maintain the streamlining needed when adding the Drop Ships ventrally on the secondary hull. The only changes to the existing hull designs were the addition of some ten decks ventrally on the secondary hull. These added decks contain the docking ring, loading facilities, and such for the six Drop Ships embarked on this vessel class.

The primary hull is built from ground up with no changes to the existing *Kirov* design (With the exception of the hard points to the Secondary hull which is minimal in change).

CLASS NAME & CONSTRUCTION HISTORY

Considering the nature and design of this vessel the class name became quite clear. It was decided that it should be named after the 6 June 1944 Normandy Invasion that signaled the end of WWII in Europe less than a year later. That battle was one of history's largest Amphibious Assaults or "beachheads". As this new vessel class was just that, a beachhead force designed to drop a large group of marines to occupy and maintain a "beachhead", this new Class was aptly named. It was named the USS *Normandy*, *Normandy* Class Supercarrier and assigned Naval Construction Code SC 36000. USS *Normandy* completed its "drawing board" stage and entered construction in 2304; some 14 years after its ground up development began. Its completion is scheduled for early April 2310 with a commissioning and deployment date of 6 June 2310 - commemorating the anniversary of the Normandy Invasion.

After the commissioning of the USS *Normandy* SC 36000, the first of five proposed *Normandy* Class Supercarriers, we will see how this idea has progressed into a multipurpose vessel. The USS *Normandy* is not just a ship of war, it also has peacetime applications. Among them are rapid deployment in the event of a disaster, transport of personnel to remote areas for scientific research where it is advisable to have some sort of support in the event of hostile attack and other such missions. At this time the proposed construction contracts for the succeeding four *Normandy* Class Supercarriers are as follows:

USS *Iwo Jima* SC 36001 - Begin construction September 2310

USS *Cheron* SC 36002 - Begin construction September 2310

USS *Axanar* SC 36003 - Begin construction June 2312

USS *Khe Sahn* SC 36004 - Begin construction June 2312

SPECIFICATIONS

Displacement:	1,752,000 mt		
Overall Length:	516.1 m		
Overall Draft:	95.2 m		
Overall Beam:	316.1 m		
Propulsion:	Two LN-65B Mod 1 dilithium energized antimatter linear warp drive units (System Contractor: Cochrane Warp Dynamics, Minos Al Rijaul, Alpha Centauri VII) Three RSQ subatomic unified energy impulse units. (System Contractor: Scarbak Propulsion Systems, Earth) QASR particle beam maneuvering thrusters (System Contractor: Scarbak Propulsion Systems, Earth) "Trentis II" pulsed laser reaction control system (System Contractor: Orage Ijek, Aksajak, Andor)		
Velocity:	Warp 10	Standard Cruising Speed	(Old Style)
	Warp 12	Maximum Cruising Speed	(Old Style)
	Warp 14	Maximum Attainable Velocity	(Old Style)
Duration:	5 years, standard		
Complement:	241	Officers	
	618	Enlisted Crew	
	0-6000	Marines *	
	859	Total Crew (Standard)	
	6859	Total Crew (Maximum)	

* Note: This number is variable contingent on Marine unit embarked.

Embarked Craft:	5	Type SW-7 Personnel Shuttle
	5	Type S-10 Shuttle pod
	5	Type S-2A Bee Work pod
	10	*Victory* Class Fighter
	40	*Vigilante* Class Fighter
Navigation:	"ARTOS" Warp Celestial Guidance (System Contractor: Mandor Industries Ltd., Salhalam, Delta IV)	
Computers:	"Daystrom" Duotronic III with Multitronic M-7 Supplement (System Contractor: Daystrom Computer Systems, Lunaport, Luna)	
Primary Phasers:	6 banks of 2 each – RIM-12C independent twin mount (System Contractor: Agusta Ansadado, Inc. Fuzes, Venus)	
Secondary Phasers:	6 banks – RSM-14B single mount (System Contractor: Agusta Ansadado, Inc. Fuzes, Venus)	
Defense:	"Arthur" primary force field and deflector control systems (System Contractor: Prentice-Schafer, Inc. Marsport, Mars)	
Life Support:	MC-3E artificial gravity generator (System Contractor: Cristobal SM/S, Manila, Earth) "Rastis" radiation protection package (System Contractor: Tidjika/Atar Associated Industries, Rastaribi, Regulus) "Cerix" waste regeneration system (System Contractor: Juliundur-Lahore Ltd. Bombay, Earth)	

Part F of Appendix Three-
The new *Gallipoli* Marine Expeditionary Transport Cruiser class design

Artwork by Scott Crown, Concept by Robb J. Jackson

By:

Lt. General Scott A. Akers
Director: Office of Fleet Historian
Regional Coordinator, Region Five
Commanding Officer, USS *Jaguar* (II) * NCC-74750 (*Akira* Class Variant)

The Dominion War taught the Federation, as well as all of the Stellar Governments in the Alpha Quadrant many lessons. One of the most overlooked of those lessons, was Starfleet's lack of ability to transport and drop LARGE ground combat units throughout the combat zone, which had essentially become the entirety of the Federation if not all of the Alpha Quadrant. Once the war started there was not time to design and build a new class of ship, so the *Maxwell* class with its large personnel capacity was dragooned into service, but without space to carry the heavy combat equipment for the marines, its utility was lessoned. Three of the old *Normandy* class Super Carriers were brought of retirement, the *Khe Sahn* and the *Axanar* being destroyed in the defense of Betazed, while the *Normandy* herself survived four major engagements, though not without taking severe damage, that ended her career a second and final time after the war.

SFMC General Officers led by new Deputy Commandant Brigadier General Aaron Murphy, endorsed a proposal by former Commandant Lt. General Scott A. Akers, the officer who also proposed and ram-rodded the *Puma* and *LeJeune* classes. The basis of the *Gallipoli* design was to take the existing of the *Hubble* class and increase its size geometrically. The seamless saucer separation, the large secondary

hull, and the latest warp dynamic design as well as its capacity for the latest technological breakthroughs, including the Photonic ablative-armor, were key to this designs selection.

GENERAL APPEARANCE

The *Gallipoli* class shares the EXACT shape and appearance of the *Hubble* class, and elongated saucer width, reminiscent of the *Ambassador* and *Galaxy* class primary hulls. With a secondary hull that has close to the hull nacelle struts that look like a cross between the *Intrepid* and the *Defiant* class hull designs. The secondary hull also has four large rear access Hangar Deck entrances, to facilitate the docking of both Runabouts and Drop Ships. From an approach vector both the *Hubble* and the *Gallipoli* classes have a quiet menacing countenance, as the warp nacelles visually bracket the primary hull giving an appearance much like the larger Jem 'Hadar warships or even the Breen cruiser.

PROPULSION AND POWER SYSTEMS

The *Gallipoli* class shares system designs with the conventional *Hubble* class ships, and **NOT** with the specialized *Omar Khayyam* ship with its specialized and CLASSIFIED systems. The Ship does use the larger version of the LF-40 warp drive units of the *Hubble* class, specifically the LF-44 Mod 3bis units, originally designed for the *Sovereign* class, but extensively modified for the *Gallipoli*. The four subatomic impulse units were doubled up due to the larger mass of this design, as well as the maneuvering system is also doubled in number of thrusters available. The system is powered by Four High Energy Plasma Conduits (from Cores to Nacelles) from two parallel M/AM engine cores.

TACTICAL SYSTEMS

The armament of the *Gallipoli* directly mimics that of the *Lejeune* class, excepting that with more surface area hard points, the ship has additional banks of phasers and torpedo launchers. The ship will carry **twelve** phaser type XII arrays. Added to this will be four "Talon" Multi-Directional Phaser Cannons. In

addition the *Gallipoli* will carry 30 type IV- G point defense phaser mounts situated around the primary and secondary hulls to protect against both missile and suicide shuttle attacks. The torpedo launchers will be the upgraded Mk98rf-bis, rapid firing launchers, while still carrying the powerful quantum torpedoes, photon torpedoes and EMP burst torpedoes, will also be capable of carrying the very dangerous transphasic torpedoes. Finally the *Gallipoli* will be the first class that will integrate the active Photonic Ablative Armor system, with existing shields systems, in this case the new FSP-2 shield system.

COMPUTER SYSTEM

Like the *LeJeune* class the *Gallipoli* will be equipped with the latest computer technology and capability, combining both the Isolinear technology and the bio-neural learning capability. The ship will also be equipped with the A.I.D.E., artificial intelligence assistant, and an independent and large bio-neural Gel Pack memory system. The redundancy of all of these systems is planned to protect the automated operations of the ship.

SHIPS FACILITIES

Special to the *Gallipoli* class is the addition of Holo-technology to three ENTIRE decks, for simulation training and situation preparation. An entire squadron can practice maneuvers, and “live fire” training, simulated to such exacting detail, that sometime the computer systems in the vehicular equipment is fooled into actually thinking it has been destroyed, and systems have to be purged restarted. In addition enough barracks spaces exists to transport the entire Regiment, and additional Battalion/Squadron of troops, as well as evacuation capability for an entire Brigade if required.

DEVELOPMENT AND CONSTRUCTION HISTORY

The first *Gallipoli* is scheduled to be built in 2386, with one every two years until five initial ships are built, with follow up development to be considered at that time. Ship names proposed are: *Saipan, Tarawa, Axanar,* and *New Sarasota.*

SPECIFICATIONS

Displacement:	2,224,000 mt
Overall Length:	504.4 m
Overall Draft:	88 m
Overall Beam:	572.6 m

Propulsion:	Two LF-44 Mod 3bis energized antimatter warp drive units (System Contractor: Cochrane Warp Dynamics, Minos Al Rijaul, Alpha Centauri VII) Eight FIG-2 subatomic unified energy impulse units (System Contractor: Kloratis Drives, Tellar) Eight QASR-2 particle beam maneuvering thrusters (System Contractor: Scarbak Propulsion Systems, Earth) Two “Trentis IV” pulsed laser reaction control system (System Contractor: Orage Ijek, Aksajak, Andor)
Velocity:	Warp 9 Standard Cruising Speed Warp 9.75 Maximum Cruising Speed Warp 9.925 Maximum Attainable Velocity

Duration:	5 years, standard
Complement:	248 Officers 632 Enlisted Crew 0-3600 Marines * 880 Total Crew (Standard) 4480 Total Crew (Maximum)

* Note: This number is variable contingent on Marine unit embarked.

Embarked Craft:	36 *Peregrine* Class Fighters 12 Type 6 Personnel Shuttle 12 Type 7 Personnel Shuttle 6 Type 9A Cargo Shuttle 12 Type 16 Shuttle pod 72 Type 9M Marine transport Shuttle 12 Type MS-15 *Pave Invader* Runabouts 4 Type DS-41 – *Leopard II* Drop Ship

Navigation:	RAV / ISHAK Mod 2 Warp Celestial Guidance (System Contractor: Tlixis Ramab RRB, Coridan III)
Computers:	M-16 Bio-Neural Gel Pack-Isolinear III with LCARS 2.5 interface software (System Contractor: Daystrom Computer Systems, Luna) ORACLE Systems De-Centralized Bio-neural Mimetic Gel Echo Processor (System Contractor: Binar-Cygnian Joint Ventures).

Phasers:	12 Type XII Collimated Phaser Array (System Contractor: HiBeam Energies, Earth) 30 Type G point Defense Phaser Mounts (System Contractor: Mejii Defense Systems) 4 "Talon" Multi-Directional Phaser Cannons (System Contractor: Asakaze Ordnance Systems Ltd., Earth)
Missiles:	15 Mk 98rf-bis Rapid Fire Multi-Load Torpedo Launchers (System Contractor: Loraxial, Andor)
Defense:	FSP-2 Primary Force Field (System Contractor: Charlotte Shields, Earth) Photonic Ablative Armor System (System Contractor, Starfleet Labs, SFHQ.)

Life Support:	NAG2 Modular Gravity Unit (System Contractor: New Amsterdam Gravitics, New Amsterdam, Alpha Centauri III) AL3 Life Support System (System Contractor: A’Alakon Landiss, Divallax, Andor)

Appendix Four:

Thesis Submission and Approval

Proposal Submitted: 17-October 2001
Proposal Approved: 17-October 2001

-----Original Message-----
From: kaileen.gibbs@wcom.com [mailto:kaileen.gibbs@wcom.com]
Sent: Wednesday, October 17, 2001 12:56 PM
To: Scott A. Akers
Subject: Re: SU-30 thesis proposal

Approved! I'd love to read your previous works as well.

Kai'leen, Support

"Scott A. Akers" <chunone@nwlink.com> on 10/17/2001 02:14:38 PM

To: "Kai'leen Gibbs" <kaileen.gibbs@wcom.com>
cc:
Subject: SU-30 thesis proposal

Below is my proposed SU-30 Thesis, Introduction and Outline.

Please let me know if this will be acceptable.

LGen Scott A. Akers

"An army marches on its stomach." Napoleon Bonaparte. The greatest military mind of the early 19th century made this quote. Was it frivolous fancy? Or rather a simple but powerful axiom of modern combat, that generals, marshals, and dictators ignored at their own peril. Napoleons own armies were stopped at the gates of Moscow, because of lack of supplies; over a century later Hitler's Nazi steamroller met the same fate. Time and time again, the army that did not plan to maintain and protect its logistics tail? Would fail in its attack, falter, and be driven back.

As much as this was true on old Earth, it is still true today, and no more evident than with the ground and deployed forces of the Starfleet Marines Corps. And even more evident is the fact that those marines needs to be transported to the battle, over great distances, and with all of their own supplies, for those situation where they positively cannot live off the land.

What then can and should be done to provide this combat support for the Marine Corps, should the SFMC have its own ships? Should the fleet provide dedicated transports for Marine troops and supplies, should the Marines establish garrisons and only venture out from those facilities when needed, and only build new such facilities during peacetime? Obviously the second concept is the best idea. Marines are neither the best suited nor the most desired personnel to operate starships. Their training and expertise is better-suited and utilized in ground and ship to ground operations. Fleet personnel assigned to and operating dedicated Transports, Supply Vessels and pre-positioned ships, give the SFMC the long reaching capability during times of conflict, while reducing the numbers of troops and garrisons needed across the Federation during the longer periods of peace.

Outline

Opening
- A. Introduction
  1. Anecdote
  2. Suggestion
  3. Thesis
- B. Reference to Previous Works
  1. AE-30
  2. IN-30
  3. AR-30
- C. Layout of Paper
  1. Troop
  2. Squadron
  3. Regiment

I. The Marine Mobile Armored Cavalry Troop
- A. Supply
  1. Food
  2. Fuel
  3. Ammo
- B. Transport
  1. Manpower
  2. Equipment
  3. Support
- C. Replenishment
  1. Food
  2. Fuel
  3. Ammo
  4. Manpower

II. The Marine Mobile Armored Cavalry Squadron
- A. Supply
  1. Food
  2. Fuel
  3. Ammo
- B. Transport
  1. Manpower
  2. Equipment
  3. Support
- C. Replenishment
  1. Food
  2. Fuel
  3. Ammo
  4. Manpower

III. The Marine Mobile Armored Cavalry Regiment

A. Supply
   1. Food
   2. Fuel
   3. Ammo

B. Transport
   1. Manpower
   2. Equipment
   3. Support

C. Replenishment
   1. Food
   2. Fuel
   3. Ammo
   4. Manpower

Closing

A. Review of Paper
   1. Troop
   2. Squadron
   3. Regiment

B. Refer to CE, MD, & PD follow-ups
   1. CE30
   2. MD-30
   3. PD-30

C. Conclusion
   1. Thesis-Decision
   2. Thesis-Suggestion
   3. Anecdote

Appendices