

**Sheplak, Scott**

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**From:** Bumar, Rich [Rich.Bumar@disney.com]  
**Sent:** Friday, September 07, 2007 3:58 PM  
**To:** Sheplak, Scott  
**Subject:** RE: Walt Disney World Title V Renewal Issues  
**Attachments:** M5197.pdf

Scott,

The engines are rated at 2550 BHP each. I have attached a spec sheet for the records in case you need it.

Rich

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**From:** Sheplak, Scott [mailto:Scott.Sheplak@dep.state.fl.us]  
**Sent:** Friday, September 07, 2007 3:46 PM  
**To:** Bumar, Rich  
**Subject:** RE: Walt Disney World Title V Renewal Issues

For the description in the renewed permit ... What is the horsepower (hp) of the DISC diesel generators? The permit cites 1.75 MW each.

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**From:** Bumar, Rich [mailto:Rich.Bumar@disney.com]  
**Sent:** Monday, August 27, 2007 4:22 PM  
**To:** Sheplak, Scott  
**Subject:** Walt Disney World Title V Renewal Issues

Scott,

I've taken a look at the issues you and I discussed last Thursday regarding the WDW Title V renewal.

**CAM Plan**

I left Figure 1 out of the plan I sent you with the renewal. The attached PDF file has the plan including Figure 1.

<<0950111 CAM Plan 2007.pdf>>

**RICE MACT (40 CFR 63 Subpart DDDDD)**

The first thing I looked at when we started the permitting process was the MACT applicability for the DISC diesel generators. The generators are referenced as an "affected source" in § 63.6590(a) which states "An affected source is any existing, new, or reconstructed stationary RICE with a site-rating of more than 500 brake horsepower located at a major source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand." That subsection further defines an "Existing stationary RICE" as "A stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before December 19, 2002." The DISC generators qualify as existing RICE because construction began on November 26, 2002. So it would seem that the rule applies to the generators.

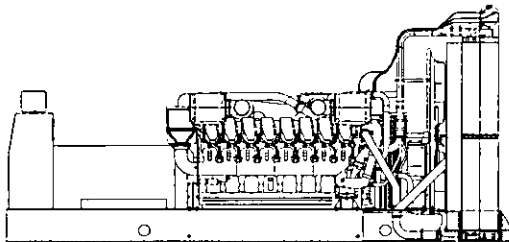
However, in the same subsection, part (b)(3) states "A stationary RICE which is an existing spark ignition 2 stroke lean burn (2SLB) stationary RICE, an existing spark ignition 4 stroke lean burn (4SLB) stationary RICE, an existing compression ignition (CI) stationary RICE, an existing emergency stationary RICE, an existing limited use stationary RICE, or an existing stationary RICE that combusts landfill gas or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis, does not have to meet the requirements of this subpart and of subpart A of this part. No initial notification is necessary." Since the DISC generators are exiting CI stationary RICE, it follows from there in the subpart that no additional requirements are placed on

9/7/2007



## Ratings Range

		60 Hz	50 Hz
Standby:	kW	1480-1750	1280-1540
	kVA	1850-2188	1600-1925
Prime:	kW	1340-1590	1160-1400
	kVA	1675-1988	1450-1750



## Standard Features

- Your Spectrum® product distributor provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- At 60 Hz the generator set accepts rated load in one step.
- The 60 Hz generator set engine is certified by the Environmental Protection Agency (EPA).
- A one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are also available.
- Generator features:
  - The brushless, rotating-field generator has broadrange reconnectability.
  - The pilot-excited, permanent-magnet generator (PMG) provides superior short-circuit capability.
- Other features:
  - Controllers are available for all applications. See controller features inside.
  - The generator set-to-skid mounting on 60 Hz models is direct mounting. The 50 Hz model mounting options include integral vibration isolation or direct mounting with spring isolators.
  - Electronic engine controls manage the engine.

## Generator Ratings

Generator	Voltage	PH	Hz	150°C Rise Standby Rating		130°C Rise Standby Rating		125°C Rise Prime Rating		105°C Rise Prime Rating	
				kW/kVA	Amps	kW/kVA	Amps	kW/kVA	Amps	kW/kVA	Amps
7M4052	220/380	3	60	1480/1850	2811	1480/1850	2811	1340/1675	2545	1340/1675	2545
	240/416	3	60	1620/2025	2810	1610/2013	2793	1470/1838	2550	1460/1825	2533
	277/480	3	60	1750/2188	2631	1750/2188	2631	1590/1988	2391	1590/1988	2391
	220/380	3	50	1480/1850	2811	1420/1775	2697	1344/1680	2552	1288/1610	2446
	230/400	3	50	1448/1810	2613	1348/1685	2432	1312/1640	2367	1224/1530	2208
	240/416	3	50	1380/1725	2394	1280/1600	2221	1256/1570	2179	1160/1450	2012
7M4054	220/380	3	60	1590/1988	3020	1590/1988	3020	1440/1800	2735	1440/1800	2735
	240/416	3	60	1750/2188	3036	1750/2188	3036	1590/1988	2758	1590/1988	2758
	277/480	3	60	1750/2188	2631	1750/2188	2631	1590/1988	2391	1590/1988	2391
	220/380	3	50	1540/1925	2925	1528/1910	2902	1400/1750	2659	1392/1740	2644
	230/400	3	50	1540/1925	2778	1540/1925	2778	1400/1750	2526	1400/1750	2526
	240/416	3	50	1540/1925	2672	1496/1870	2595	1400/1750	2429	1360/1700	2359
7M4058	220/380	3	60	1750/2188	3324	1750/2188	3324	1590/1988	3020	1590/1988	3020
	240/416	3	60	1750/2188	3036	1750/2188	3036	1590/1988	2758	1590/1988	2758
	277/480	3	60	1750/2188	2631	1750/2188	2631	1590/1988	2391	1590/1988	2391
	220/380	3	50	1540/1925	2925	1540/1925	2925	1400/1750	2659	1400/1750	2659
	230/400	3	50	1540/1925	2778	1540/1925	2778	1400/1750	2526	1400/1750	2526
	240/416	3	50	1540/1925	2672	1540/1925	2672	1400/1750	2429	1400/1750	2429
7M4176	220/380	3	60	1750/2188	3324	1750/2188	3324	1590/1988	3020	1590/1988	3020
7M4292	347/600	3	60	1750/2188	2105	1750/2188	2105	1590/1988	1912	1590/1988	1912
7M4370	2400/4160	3	60	1750/2188	304	1750/2188	304	1590/1988	276	1590/1988	276
	1905/3300	3	50	1540/1925	337	1520/1900	332	1400/1750	306	1384/1730	303
7M4374	2400/4160	3	60	1750/2188	304	1750/2188	304	1590/1988	276	1590/1988	276
	1905/3300	3	50	1540/1925	337	1540/1925	337	1400/1750	306	1400/1750	306

**RATINGS:** All three-phase units are rated at 0.8 power factor. **Standby Ratings:** Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. **Prime Power Ratings:** Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528/1, overload power in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. For limited running time and base load ratings, consult the factory. Obtain the technical information bulletin (TIS-101) on ratings guidelines for the complete ratings definitions. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. **GENERAL GUIDELINES FOR DERATION: ALTITUDE:** Derate 1.5% per 305 m (1000 ft.) elevation above 1006 m (3300 ft.). Maximum altitude capability is 4572 m (15000 ft.) on 60 Hz and 6096 m (20000 ft.) on 50 Hz. **TEMPERATURE:** Derate 0.4% per 5.5°C (10°F) temperature above 25°C (77°F).

# Alternator Specifications

Specifications	Generator
Type	4-Pole, Rotating Field
Exciter type	Brushless, Permanent-Magnet Pilot Exciter
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H, Synthetic, Nonhygroscopic
Temperature rise	130°C, 150°C Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Rotor balancing	125% 60 Hz, 150% 50 Hz
Voltage regulation, no-load to full-load (with <0.5% drift due to temp. variation)	±0.25%
Unbalanced load capability	100% of Rated Standby Current
One-step load acceptance at 60 Hz	100% of Rating
Peak motor starting kVA:	(35% dip for voltages below)
480 V, 416 V    7M4052 (4 bus bar) ..	5500 (60 Hz), 4700 (50 Hz)
480 V, 416 V    7M4054 (4 bus bar) ..	7000 (60 Hz), 6600 (50 Hz)
480 V, 416 V    7M4058 (4 bus bar) ..	12500 (60 Hz), 8200 (50 Hz)
380 V            7M4176 (4 bus bar) ..	5400 (60 Hz)
600 V            7M4292 (4 bus bar) ..	4200 (60 Hz)
4160 V, 3300 V 7M4370 (6 lead) .....	5500 (60 Hz), 3000 (50 Hz)
4160 V, 3300 V 7M4374 (6 lead) .....	6200 (60 Hz), 3750 (50 Hz)

- Complies with NEMA MG1, IEEE, and ANSI standards for temperature rise and motor starting.
- Complies with ISO 8528-5, Class G3 requirements for transient performance.
- Sustains short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustains short-circuit current enabling downstream circuit breakers to trip without collapsing the generator field.
- Self-ventilation, dripproof construction.
- Superior voltage waveform from two-thirds pitch windings and skewed stator.
- Digital solid-state, volts-per-hertz voltage regulator with ±0.25% no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

## Application Data

### Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Detroit Diesel/MTU	
Engine: model	16V4000 (T163-7K36)	16V4000 (T163-7K16)
Engine: type	4-Cycle, Turbocharged, Intercooled	
Cylinder arrangement	16 V	
Displacement, L (cu. in.)	65 (3967)	
Bore and stroke, mm (in.)	165 (6.5) x 190 (7.5)	
Compression ratio	13.7:1	
Piston speed, m/sec. (ft./min.)	11.4 (2244)	9.5 (1870)
Main bearings: quantity, type	—	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	1900 (2550)	1686 (2260)
Cylinder head material	Cast Iron	
Crankshaft material	Forged Steel	
Valve (exhaust) material	High Alloy Steel	
Governor: type, make/model	DDEC Electronic Control	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±0.25%	
Frequency	Fixed	
Air cleaner type, all models	Dry	

### Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust flow at rated kW, m <sup>3</sup> /min. (cfm)	413 (14590)	325 (11520)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	407 (765)	507 (945)
Maximum allowable back pressure, kPa (in. Hg)	5.1 (1.5)	
Exhaust outlet size at engine hookup, mm (in.)	2 @ 254 (10)	

### Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive)		Negative
Volts (DC)		24
Ampere rating		70
Starter motor rated voltage (DC)		Dual, 24
Battery, recommended cold cranking amps (CCA):		
Qty., CCA rating above 0°C (32°F)		4, 950
Qty., CCA rating below 0°C (32°F)		8, 1250
Battery voltage (DC)		12

### Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, mm (in.)	25 (1.0)	
Fuel return line, min. ID, mm (in.)	19 (0.75)	
Max. lift, engine-driven fuel pump, m (ft.)	—	
Max. fuel flow, Lph (gph)	1045 (276)	1068 (283)
Max. fuel pump restriction with new/used filter, kPa (in. Hg)	20 (6)/41 (12)	
Fuel filter	2, Secondary	
Recommended fuel	#2 Diesel	

### Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	230 (243)	
Oil pan capacity with filter, L (qt.)	250 (264)	
Oil filter: quantity, type	4, Spin-On	
Oil cooler	Water-Cooled	