



Descriptive Report and Test Results

MASTER CONTRACT: 215310

REPORT: 2701169

PROJECT: 70121716

Edition 1: DATE; Project 2701169 – Shanghai
Issued by George Chen

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PRODUCTS

CLASS 3881 51 - TOOLS - Portable

CLASS 3881 81 - TOOLS - Portable - CERTIFIED TO U.S. STANDARDS

Model	Description	V	Hz	A	RPM
DM6P	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
CD160D	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
CD6D	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
DM63D	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
HCD36	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
DM6D	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
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DMC6P	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
DMC160D	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
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DMC63P	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270

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APPLICABLE REQUIREMENTS

CAN/CSA-C22.2 No. 60745-1-07 (3rd Edition)Upd3 - Safety of Portable Electric Tools--Part 1:
(UL 60745-1-4th Edition) General Requirements
CAN/CSA-C22.2 No. 60745-2-1-04 with AMD 1 - Safety of Portable Electric Tools--Part 2:
(UL 60745-2-1-2nd Edition) Particular Requirements for drills and impact drills

Product markings shall be in accordance with the related standards. In addition, it shall be the responsibility of the manufacturer to provide additional markings on the product to comply with the requirements of the local regulatory authorities. For example, in Canada, any caution and warning markings must be provided in French and English.

Battery tools and detachable or separable battery packs shall be marked with:

- The submittor's name and/or master contract number "215310", adjacent to the CSA Monogram with the C US Indicator;
- rated voltage(s) or rated voltage range(s), in volts;
- symbol for nature of supply;
- name or trade mark or identification mark of the manufacturer or responsible vendor;
- model or type reference;
- manufacturer's address or country of origin;
- date of manufacture
- any mandatory mark showing compliance with legislation by reference to standard.

- "WARNING: To reduce the risk of injury, user must read instruction manual."

Note: Minimum 2.4mm high letters for "WARNING".

"The product may bear one of the following CSA markings: CSA, or CSA us, or cCSAus."

Note: Bilingual Markings for products with CSA Mark.

Jurisdictions in Canada may require these markings to be also in French. It is the responsibility of the manufacturer to provide bilingual marking, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities. It is the responsibility of the manufacturer to determine this requirement and have bilingual wording added to the products.

ADDITIONAL MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

- Rated no-load speed in revolutions per minute.
- Maximum capacity, in millimetres, of the chuck.

Nameplate adhesive label material approval information:

Manufactured by YONG MEI PRINTING CO LTD (MH17252) (CSA 097277_L_000) Cat.no. YM-50.
Max. 80C.
Any cULus Recognized or cCSAus certified equivalent Pressure-sensitive label is acceptable.

INSTRUCTIONS See standard CAN/CSA-C22.2 No. 60745-1-07 (UL 60745-1-4th Edition) and CAN/CSA-C22.2 No. 60745-2-1-04 with AMD 1, (UL 60745-2-1-2nd Edition with AMD 1) for details.

An instruction manual and general safety instructions shall be provided with the tool and packaged in such a way that is noticed by the user when the tool is removed from the packaging. The general safety instructions may be separate from the instruction manual. They shall be written in the official language(s) of the country in which the tool is sold.

Instructions shall be legible and contrast with the background.

The instruction manual shall include the name and address of the manufacturer or supplier of branded product and an explanation of the symbols used on the product.

The Safety Rules specified in this clause, if in English shall be verbatim and in the exact order as given and in any other official language to be equivalent.

Format or General Safety Instructions must differentiate, by font highlighting or similar means.

Additional safety instruction:

- **Wear ear protectors when impact drilling.** Exposure to noise can cause hearing loss.
- NOTE: The above warning applies only to impact drills and may be omitted for drills other than impact drills.
- **Use auxiliary handle(s), if supplied with the tool.** Loss of control can cause personal injury.
 - **Hold power tool by insulated gripping surfaces, when performing an operation where the cutting accessory may contact hidden wiring or its own cord.** Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.

GENERAL POWER TOOL SAFETY WARNINGS.

WARNING! Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury. **Save all warnings and instructions for future reference.** The term "power tool" in all of the warnings listed below refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

1) Work area safety

- a) **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
- b) **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.
- c) **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

2) Electrical safety

- a) **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
- b) **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
- c) **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- d) **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.
- e) **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.
- f) **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.

3) Personal safety

- a) **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- b) **Use personal protective equipment. Always wear eye protection.** Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.

- c) **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
 - d) **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
 - e) **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
 - f) **Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.
 - g) **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.
- 4) **Power tool use and care**
- a) **Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.
 - b) **Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
 - c) **Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.
 - d) **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** Power tools are dangerous in the hands of untrained users.
 - e) **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.
 - f) **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
 - g) **Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from those intended could result in a hazardous situation.
- 5) **Service**
- a) **Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.

ALTERATIONS

Marking as noted above.

SPECIAL INSTRUCTIONS FOR FIELD SERVICES

1. Component descriptions marked with either the "(INT)" or "(INT*)" identifiers may be substituted with other components providing the requirements specified under the notes in the "Description" are complied with.

FACTORY TESTS

Warning: The factory test(s) specified may present a hazard of injury to personnel and/or property and should only be performed by persons knowledgeable of such hazards and under conditions designed to minimize the possibility of injury.

The manufacturer shall determine by routine production-line test that each tool produced will withstand without an indication of unacceptable performance, the application of a potential as given in the following table. The duration of application shall be 1 second.

Points between which potential is to be applied	Test potential		
	Class		
	I	II	III
1. Live parts and dead metal parts insulated from each other by basic insulation.	1200	1200	500
2. Accessible dead metal parts or, for a tool with an outer enclosure of insulating material, metal foil wrapped tightly around the enclosure and inaccessible metal parts including metal foil in contact with the insulating barriers provided for spacings involving supplementary or reinforced insulation.		1500	
3. Live parts and accessible dead metal parts or, for a tool with an outer enclosure of insulating material, metal foil wrapped tightly around the enclosure.		3000	
Note A: If necessary because of the inaccessibility of parts, test in accordance with items 1 and 2 may be conducted on sub-assemblies of the tool, and, in this case, the test indicated in item 3 is to be conducted. If the tests in accordance with item 1 and 2 are conducted on the completely assembled tool, the tests indicated in item 3 may be omitted if there is no reinforced insulation.			
Note B: Those parts of the tests described in items 2 and 3 that include application of metal foil to outer enclosures of insulating material may be waived if the manufacturer has an acceptable quality control program. This program is to determine that the insulating material in question is free from cracks and metal inclusions, and that it has the physical and electrical strength required for the application. To determine that the material is free of cracks or metal inclusions, a 100 percent visual inspection is required. Periodic physical-property tests on molded parts shall also be conducted.			
Note C: The test of item 3 may be waived for accessible metal parts, such as assembly screws, that are: (1) isolated by an outer enclosure of insulating material that is subject to the control program indicated in Note B and (2) are so located that they are remote from live parts and from inaccessible metal parts separated from live parts by basic insulation only. The remoteness is to include consideration of possible displacement of parts as the result of improper assembly.			

The tool may be in a heated or unheated condition for the test.

The test shall be conducted with the tool complete, fully assembled. It is not intended that the tool be un-wired, modified, or disassembled for the test.

Parts such as snap covers, auxiliary handles, guards, or friction-fit knobs that would interfere with the performance of the test need not be in place.

The test may be performed before final assembly if such a test represents that of the completed tool.

If the tool employs a solid-state component that can be damaged by the test potential, the test on each tool may be conducted before the component is electrically connected. In such a case, additional testing is to be made of a random sampling of each day's production with the circuitry rearranged to reduce the likelihood of damage to any solid-state component but retaining representative dielectric stress of the circuit.

The specified control of the applied voltage, manual or automatic, shall be maintained under conditions of varying line voltage. Higher test potentials may be used if the higher dielectric stress is not likely to adversely affect the insulating systems of the product.

The test equipment is to have the following features and characteristics:

- A. A means of indicating the test voltage that is being applied to the tool under test. This may be accomplished by sensing the voltage at the test leads or by an equivalent means.
- B. An output voltage that (1) has a sinusoidal waveform, (2) has a frequency that is within the range of 40 v 70 Hz, and (3) has a peak value of the waveform that is not to be less than 1.3 and not more than 1.5 times the root-mean-square value. As an alternative, a DC potential of 1.4 times the RMS value may be used.
- C. A means of effectively indicating unacceptable performance. The indication is to be (1) auditory if it can be readily heard above the background noise level, (2) visual if it commands the attention of the operator, or (3) a device that automatically rejects an unacceptable product. If the indication of unacceptable performance is auditory or visual, the indication is to remain active and conspicuous until the test equipment is reset manually.
- D. When the test equipment is adjusted to produce the test voltage and a resistance of 120,000 ohms is connected across the output, the test equipment is to indicate an unacceptable performance within 0.5 second. A resistance of more than 120,000 ohms may be used to produce an indication of unacceptable performance, if the manufacturer elects to use a tester having higher sensitivity.

There is not to be any transient voltage applied to the tool under test that results in the instantaneous voltage applied to the product exceeding 120 percent of the peak value of the test voltage that the manufacturer elects to use for this test. This requirement applies for the entire duration of the test, including the time that the voltage is first applied to the product and the time that the voltage is removed from the product.

During the test, a sufficient number of primary switching components shall be in the on position so that all primary circuitry will be stressed. Both sides of the primary circuit of the appliance are to be connected together to one terminal of the test equipment. The second equipment terminal is to be connected to accessible dead metal.

Tools utilizing motors, relays, coils or transformers, having circuitry not subject to excessive secondary build-up in case of indication of unacceptable performance during the test, may be tested with only one side of the primary circuit connected to the dielectric test equipment.

COMPONENT SPECIAL PICKUP

1. Component descriptions marked with the identifier “(CT)” are subject to annual pickup and Conformity Testing.

DESCRIPTION

Notes:

1. Component Substitution
 - a) Critical components (those identified by mfr name, cat no), which are NOT identified with either "INT" or "INT*" are not eligible for substitution without evaluation and report updating
 - b) The term "INT" means a "Certified" and/or "Listed" (or a "Recognized" and/or "Accepted") component may be replaced by one "Certified" and/or "Listed" by another certification organization accredited by the appropriate accreditation body or scheme requirements to the correct standard, for the same application; providing the applicable country identifiers are included and requirements in item "d" below are complied with.
 - c) The Term "INT*" means a "Recognized" and/or "Accepted" component may be replaced by one "Recognized" and/or "Accepted" by another certification organization accredited by the appropriate accreditation body or scheme requirements to the correct standard, for the same application, providing the applicable country identifiers are included, the component is **also** CSA Certified, the requirements in item "d" below are complied with and any "conditions of suitability" for the component (as recorded in this descriptive report) are complied with.
 - d) Components which have been substituted, must be of an equivalent rating, configuration (size, orientation, mounting) and the applicable minimum creepage and clearance distances are to be maintained from live parts to bonded metal parts and secondary parts.
 - e) Substitution of a "Certified" and/or "Listed" component with a component that is "Recognized" or "Accepted" is not permitted without evaluation and report updating.

Subject models are double insulated electric drills. Class II obtained by reinforced commutator assembly and basic insulated components housed in a supplementary insulated plastic enclosure.

The following table itemizes those products covered along with their electrical ratings and model differences.

Model	Description	V	Hz	A	RPM
DM6P	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
CD160D	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
CD6D	Diamond Core Drill, cord connected, grounded	115	60	14.2	930/1520/4270
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MODEL DIFFERENCES BY ITEM NO

Model	1	2	3	4	5	6	7	8	9	10	11
DM6P	X	A	X	A	X	X	X	X	X	X	X
CD160P	X	A	X	A	X	X	X	X	X	X	X
CD6P	X	A	X	A	X	X	X	X	X	X	X
DM63P	X	A	X	A	X	X	X	X	X	X	X
DMC6P	X	A	X	B	X	X	X	X	X	X	X
DMC160P	X	A	X	B	X	X	X	X	X	X	X
DMC63P	X	A	X	B	X	X	X	X	X	X	X
DM6D	X	B	X	A	X	X	X	X	X	X	X
CD160D	X	B	X	A	X	X	X	X	X	X	X
CD6D	X	B	X	A	X	X	X	X	X	X	X
DM63D	X	B	X	A	X	X	X	X	X	X	X
HCD36	X	B	X	A	X	X	X	X	X	X	X
DMC6D	X	B	X	B	X	X	X	X	X	X	X
DMC160D	X	B	X	B	X	X	X	X	X	X	X
DMC63D	X	B	X	B	X	X	X	X	X	X	X

No	UL CCN.	Component Description	Mfr.	Cat. No. Material	Rating, Comment, Dimensions	App. Agcy.
1		Enclosure		Cast Aluminum	Photo.1 and 2. Overall 143mm by 105mm by 107mm high by 4mm thick. Provided with a motor cover overall 95mm by 95mm by 53mm.	
2 A	QMFZ2	Handle	Nan Ya Plastics Corp (E130155)	PA6 2210G6	Photo.1 and 2. Rated HB at 1.5mm HWI 2 HAI 0, 120C. Two pieces construction. Overall 195mm by 185mm by 45mm by 2.8mm. Provided with four holes overall 30mm by 2mm. Provided with a lock on button. Provided with indicator light.	UL
2 B	QMFZ2	Handle	Nan Ya Plastics Corp (E130155)	PA6 2210G6	Photo.1 and 2. Rated HB at 1.5mm HWI 2 HAI 0, 120C. Two pieces construction. Overall 340mm by 82mm by 152mm by 2.8mm. Provided with four holes overall 30mm by 2mm. Provided with a lock on button. Provided with indicator light.	UL
3		Spindle		Steel	31mm OD.	
4 A		Gear Housing		Cast Aluminum	Photo. 1. Over all 169mm by 117mm by 120mm by 4mm thick. Secured to Enclosure by screws. Provided with Gear selector, three speed ratio levels provided, the first one is 38T/8T X46T/8T, the second one is 38T/8T X42T/12T, the third one is 38T/8T X29T/24T.	
4 B		Gear Housing		Cast Aluminum	Photo. 7. Over all 180mm by 117mm by 120mm by 4mm thick. Secured to Enclosure by screws. Provided with Gear selector, three speed ratio levels provided, the first one is 38T/8T X46T/8T, the second one is 38T/8T X42T/12T, the third one is 38T/8T X29T/24T.	
5	QMFZ2	Auxiliary Handle		Aluminum and Plastic	Secured to Gear housing by thumb screw. The Flange is overall 67.6mm OD, 17mm above the grasping surface	UL
6		Water Hose			Photo.1. Overall 180mm by 15.5mmOD. Provided with water feed valve and quick release.	
7		Power Supply Cord		SJTW 14/2 AWG	Rated 105C, 300V. Provided with polarized 1-15P attachment plug integral with Appliance-leakage Current Interrupters. Minimum 1.8m long. Leads are connected to On/Off Switch terminal.	CSA or UL
8		Cord Guard Bushing		PVC	60mm long with a 23mm OD by 3mm thick lip at one end, 9mm ID, 23mm OD tapering to 11mm OD. Extends 53mm beyond the cord entry opening.	

9	QMFZ2	Strain Relief	Same as Handle	Same as Handle	Overall 23 mm by 9mm by 5.5 mm by 4mm thick. Secured to the integrally molded U-Shaped boss in handle by screws.	UL
10	QMFZ2	Switch Trigger	Same as Handle	Same as Handle	Overall 61mm by 22mm by 18mm by 2mm.	UL
11	WOYR2	On/Off Switch		BGV2115	Rated 15A, 125Vac. 5E4 Trigger type.	UL
12		Internal Wiring		AWM 1015 or TEW	20AWG min, 105C, 300V. Ends of Leads are terminated in brass crimp or tab to connect to electrical components terminals. Connections on switch terminals are sleeved by certified heat shrinkable tube.	CSA or UL
13	QMFZ2	PCB	Nan Ya (E98983)	UV Block FR-4-86	Photo. 5 & 10. Rated V-0 at 1.4mm. 130C. Overall 54mm by 34mm by 2mm thick. Used for protecting overload. Provided with a LED. Fixed in PCB Housing.	UL
14	QMFZ2	PCB Housing	Same as Handle	Same as Handle	Overall 60mm by 40mm by 13.5mm by 3mm thick.	UL
15		Motor			Photo. 3. Universal series type. Rated 115V, 50~60Hz, 3.2A. Class A insulation.	
I		Brush		Carbon	Photo. 4. Overall 19mm by 17mm by 7mm.	
II		Brush Holder		Brass	Photo. 4. Overall 19mm long by 10mm by 10mm by 1mm thick. Secured to the Motor Enclosure Cover. Provided with spring to press the Brush. The spring tip is shorter than the brush holder and will be trapped on the holder at the end of brush life.	
III		Motor Enclosure Cover	Same as handle	Same as handle	Overall 86mm OD by 56mm ID by 6.5mm	UL
IV		Stator Lamination		Laminated Steel	Photo. 3. Overall 81mm OD by 46mm ID by 78mm by 70mm by 70mm stack.	
V		Stator Winding			Enameled copper wire. 0.95mm diameter. 35turns/pole. Varnish impregnated.	CSA or UL
VI	QMFZ2	Stator Slot Liner	The TOYO Fibre (E55656)	Vulcanized fiber	0.25mm thick, extending min. 2mm beyond the stator laminations.	UL
VII		Stator Lead	Same as internal wiring	Same as internal wiring	Terminated in tab and inserted into post on Brush Holder.	CSA or UL
VII I		Armature Lamination		Laminated Steel	Overall 46mm OD by 70mm stack. 12 slots.	
VII I		Armature Winding			Enameled copper wire. 0.85mm diameter, 5 turns/slot. Varnish impregnated.	CSA or UL
IX		Shaft		Steel	Double/Reinforced insulated	

X	QMFZ2	Shaft Insulation	BMC CHINA (E253513)	FTI901	Photo. 6. Rated HB at 1.2mm thick, 130C. Minimum 1.2mm thick under lamination as supplementary insulation, and minimum 2mm thick under winding as reinforced insulation, 1.35mm thick under commutator insulation. Extends 6mm beyond the commutator end and 13mm beyond windings at fan end.	UL
XI	QMFZ2	Armature Slot Liner	The TOYO Fibre (E55656)	Vulcanized fiber	0.25mm thick. Extends min. 2mm beyond laminations.	UL
XII	QMFZ2	Armature Slot wedge	Jindal (E176671)	PET	0.5mm thick. Extends min. 2mm beyond laminations.	UL
XII I	QMFZ2	Armature End Spider	Zona (E171184)	Vulcanized Fiber	Provided at each end of armature. Min. 2mm thick at laminations.	UL
XI V		Commutator		Copper	34mm OD, 30mm long, including 24 bars.	
XV		Commutator Insulation		Phenolic	1.5mm thick.	
XV III		Fan		Plastic	Radial type. 80mm dia. by 15mm high. Provided with 30 blades, 63mm long by 13mm wide by 2mm thick.	
XV IV		Motor Hosing	Same as Handle	Same as Handle	Overall 87mm OD by 120mm long. Provided with a 70mm by 30mm Opening for PCB house. Trap fit in Enclosure.	UL

TEST HISTORY

Edition: 1 (Project 2701169) Test results in Att2 Test report A – 1 to 54.

Edition 2: (Project 70121716) Update report to correct current rating of all models.

No test was considered necessary.

---End of Report---