

Conversation between Mark Gray and Mark McKay on 5/19/07

Mark Gray is E.V. Gray's 6th child born in 1958 in southern California. For the past several years he has been a parts-room manager for a school district repair shop which maintains over 200 buses. He is a single parent who currently lives with his three young adult children. (Two daughters and one son).

Mark Gray was employed by his father, E.V. Gray, for the majority of the time between 1979 and early 1988. In this time period, he served in the capacity of a general assistant. He traveled and worked at seven different locations, including a two week long trip to Israel.

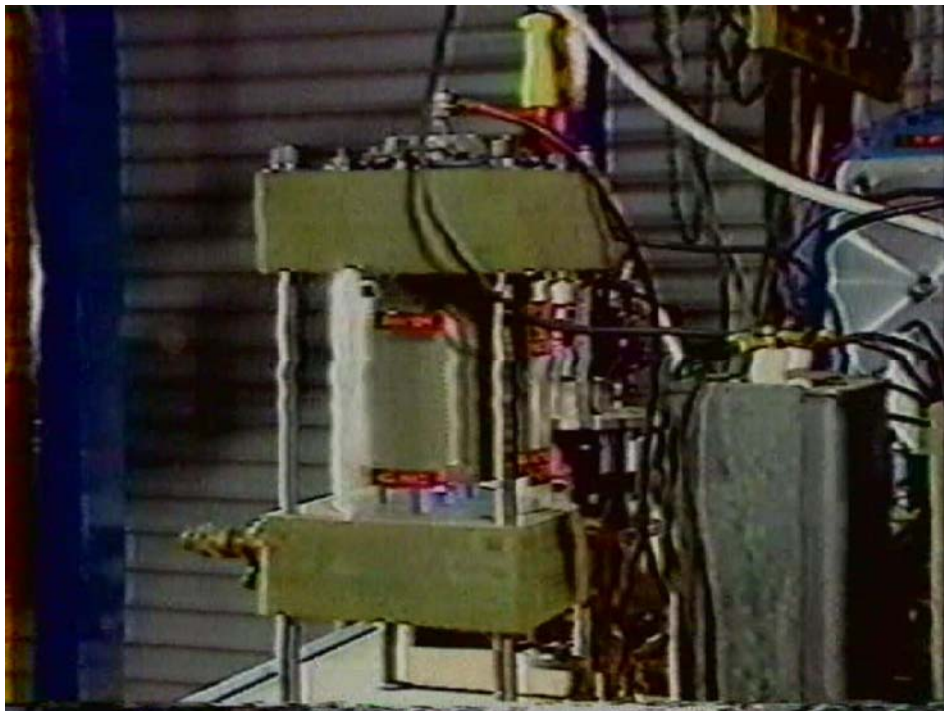
Under his father's direction he assisted in the building of the majority of the "Trigger Carts" (The converter systems under the pulse motors) that are displayed in the 1896 ZTEX promotion video. He also assisted in securing parts from custom vendors, video taped the technology, assisted with various demonstrations, drove the company truck, and wrote licensing agreements. These are just a few of the multitude of tasks he did during his tenure of service.

Mark parted on good terms from his father in early 1988 when funding ran out due to differences between E.V. Gray and certain investors, over the control and future of the technology. These differences were heightened when an alleged government contact, interested in a possible R&D program on the switching/triggering aspect of the technology, came into the picture late 1987 – early 1988.

While Mark had a tremendous exposure to his father's later technology (1979-1988), his detailed understanding of the underlying functioning principles is almost gone. He did what he was told to do and was compensated appropriately for his services, but never got deeply involved with the workings of the technology. For the past twenty years Mark has been completely divorced from his father's technology and has forgotten almost everything he knew about it. He regrets not having paid more attention and not having taken a real interest in the "nuts and bolts" of the processes.

Mark was most willing to share these anecdotal technical Tid-Bits that might have a bearing on rediscovering this lost technology.

The Mark I (Converter Switching Element Tube)



- the cylindrical glass enclosure is a Colman gas lantern cover

COMMENTARY: This really limits the magnitude of the internal pressure of what ever gas may have been present. The size of the end caps could support pressures up to 6000 psi. With such a thin glass envelop anything over 3 psi would be difficult.

“He didn’t want to pay the high price for a machined enclosure”

- all electrical connections were made from the top

COMMENTARY: I only see two electrical connections at the top of this device (the black center conductor and the white conductor with the large yellow single pin connector. Therefore the “Grid” is not connected to anything, unless it is connected to one of the electrodes.

- the gap was adjustable
- the internal gas was presumed to be Nitrogen from a welding supply house

COMMENTARY: Mr. E.V. Gray was very familiar with welding gasses

“He didn’t get involved with anything that exotic” (Referring to S6F)

- Purpose of the Grids: “Possibly to cover up something he didn’t want people to see?”

COMMENTARY: Like an additional series component, perhaps an HV RF coil?

- Was there an electrical connection to the “Grids”? “I don’t recall”
- “the electrodes were made of Tungsten or Titanium. Which ever material Russia is famous for.” [Titanium]



Ignitrons installed on the “Red Motor Cart”

The Mark II “Silver Cylinder” (Ignitron)

- This was an off the shelf commercial device that was a metal cylinder about 2” in diameter and 6” long.
- The terminal insulators were glass
- It was a two terminal device only, with wires connected to the top and the bottom.
- The round flanges were custom made end pieces to secure additional finned aluminum heat sinks that were attached around the periphery.
- The band in the center was a radiator clamp to hold it all together. Sometimes two clamps were used.
- These units did occasionally wear out or fail. New units were stocked on the shelf
- These devices contained Mercury and therefore retired units were treated with respect in storage.
- When these units arced inside you could see a blue flash through the terminal glass.

COMMENTARY: It appears these devices are Class A Ignitrons. They are the right size, right form factor and contain Mercury. However an Ignitron is a three, or more, terminal device. It operates much like a very high current thyatron. If there were no control connections for the igniter, then one use might have been a fixed-distance spark gap and just overvolted until it fired. One advantage of this approach would be a clean Mercury surface after each pulse. The pulse rate observed in the 1986 video is on the order of 2 Hz.

It is unclear whether these ignitrons were a replacement for the CSET or components in addition to the CSET. So far, the best explanation supports the idea that the ignitrons replaced the function of the rotating spark gaps that were in the commutator section of E.V. Gray’s early motor designs. The 1986 Promotion video will show that E.V. Gray used several of these devices for his motors (up to six per cart). E.V. Gray probably developed a new system where the complexity of the old front end rotary spark gap array was no longer needed, thus greatly reducing the fabrication costs per motor.

Magnet wire for the Popping coils:

- All the wire for the construction of the projectile coils was standard copper magnet wire
- One company was contracted to machine the aluminum or plastic coils forms (Normally Nylon). Another company was hired to wind the coils.

“We attempted to wind a few of our own coils. But not many”

Wire used in special places:

“That wire there was the expensive silicone filled wire that had to be used at that connection” pointing to the photo of the battery charger converter and the wires coming off the storage capacitor.

COMMENTARY: In the Cannady Interview it was noted how “Cold Electricity” would destroy the insulation on conductors. Apparently E.V. Gray did find a tentative solution to this problem by using special wire in the locations where it was required.

A Trip to the Capacitor Vendor

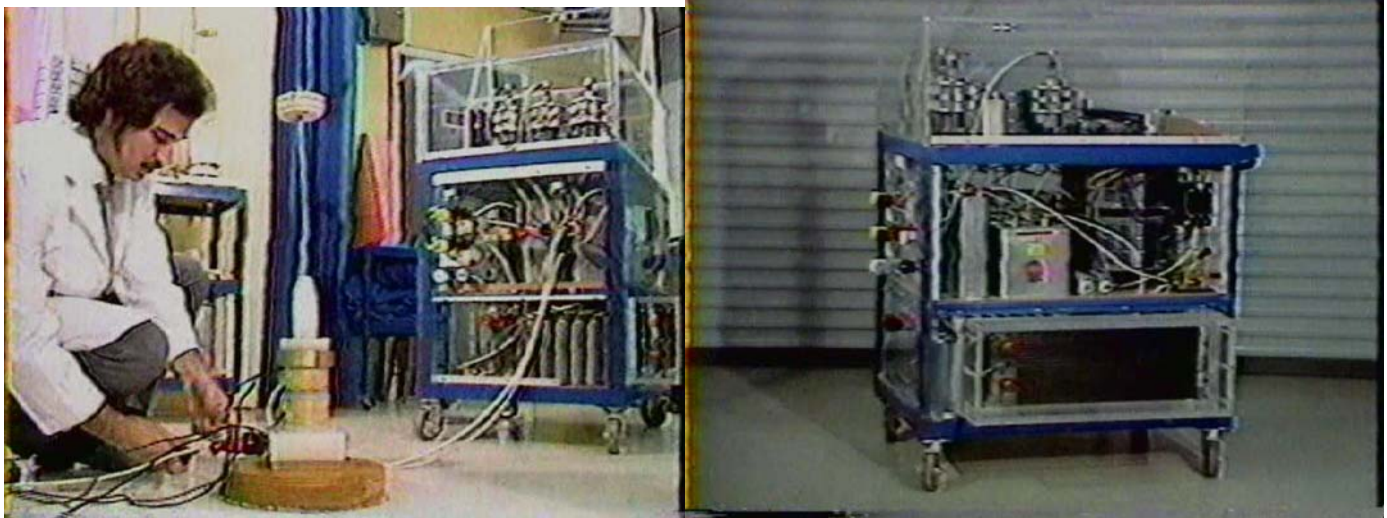
Mark Gray recounted an experience he had when he was instructed to return some defective capacitors to a custom supplier in Southern California.

The internal connection between the external capacitor terminal and the internal plates had opened up because the wire gauge was too small, thus causing it to fail. To explore this complaint first hand, the vendor opened up one defective unit with a can opener. Since the connection had been separated at this point there was still a substantial charge still left in the unit. There was an unexpected accidental discharged that caused a loud bang. Apparently the vendor quickly made repair modifications to all of the returned capacitors at no charge. Mark reports that the plates were gray with layers of a white material in between them. The entire unit was filled with a thick clear gel. Mark Gray claims he recalls values of 500 mF at 5 KV.

COMMENTARY: This type of construction implies a low inductance plate capacitor rather than the higher inductance rolled designs. The residual stored charge implies a low loss construction. I don't know about the dielectric, it could have been a standard poly material. Another authority claims E.V. Gray used Mica. I don't know what color mica is when installed in a large capacitor.

“Cold electricity” is also known for its loud discharges.

The “Trigger Cart”



Mark Gray claims that the heart and soul of the E.V. Gray technology is the “Trigger Cart”. This is the power supply that was the source of the anomalous energy for all of the projectile demonstrations. What is interesting about this system, is that it operates from 220 V AC, counter to all of E.V. Gray’s previous motors and circuits.

COMMENTARY: Some researchers have proposed that the E.V. Gray technology required the use of wet cell lead-acid batteries for the generation of “Cold Electricity”. Apparently this is not the case with the existence of this cart. However, the overall OU qualities of this technology may be impaired with the use of utility power. But at the time, E.V. Gray was seeking military customers who could benefit from the propulsion features of this equipment.

Trigger Cart Operation: "Slowly crank up the Auto-transformer until the tubes started to fire, then watch the volt meter. When it got to 5,000 volts I would quickly turn down the Auto-transformer and fire the projectile."

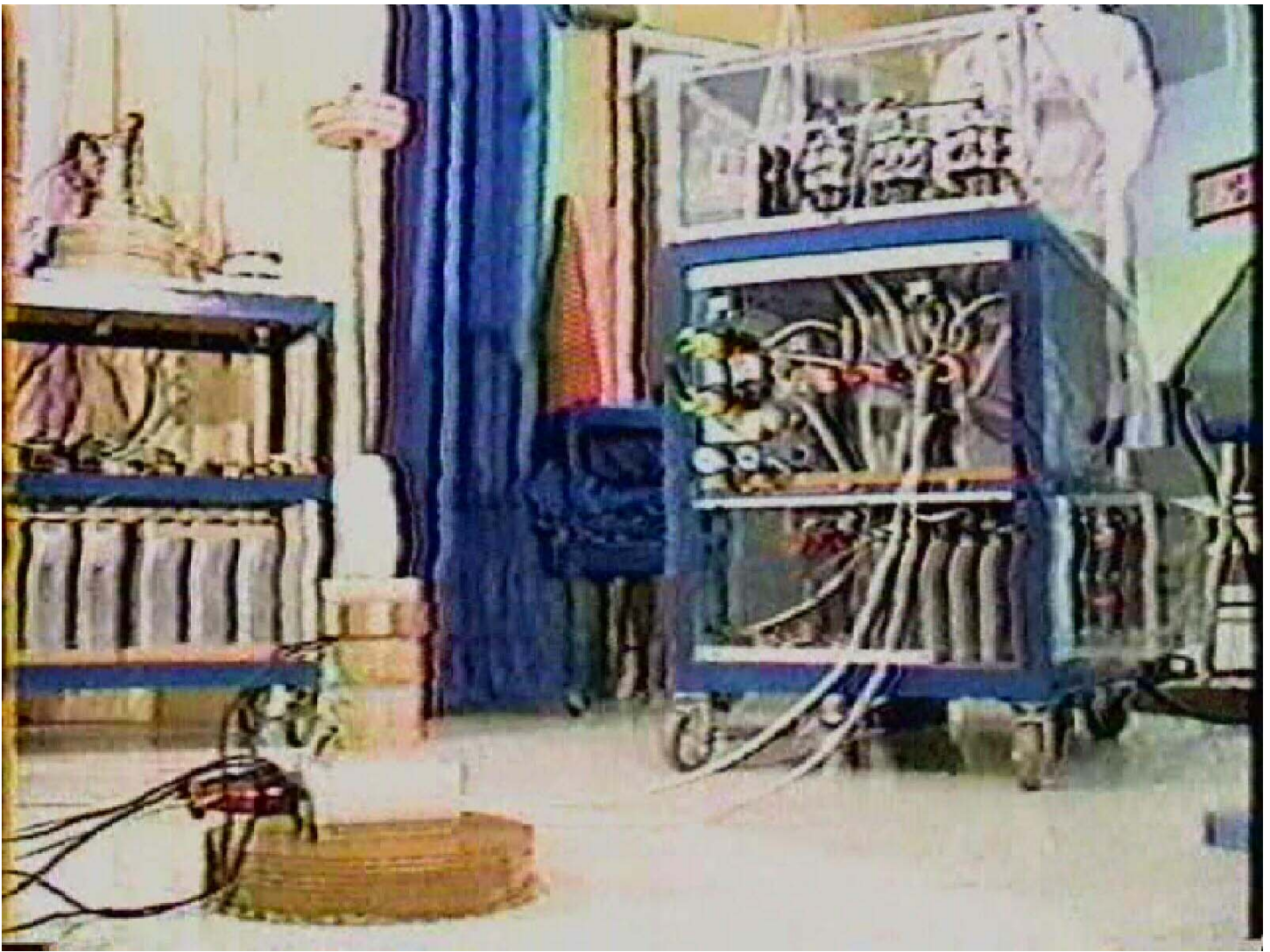
COMMENTARY: In the background sound of the demonstration video we hear about 20 pops before the projectile is ready for launch. It seems E.V. Gray was discharging one capacitor into another capacitor. Once this charging operation was complete he would discharge the collected anomalous energy through his opposing coils to launch a projectile. I don't know what he used for a discharge switch.

If Mark Gray was reading an analog voltage meter then we can be pretty sure that the anomalous “Cold electricity”, when stored in a capacitor, can be observed as a positive classical voltage. This is very consistent with Tom Bearden’s description of “Negative Mass Energy” - if the two phenomena are at all related. Earlier photos show E.V. Gray using an analog Triplett 630-A multimeter to measure the voltage of “Black Boxes” that are assumed to be storage capacitors in his early “Popping Coil” demonstrations (1973).

If the Pops we hear (20 or so per launch) are from the four Ignitrons on top of the cart, then it is reasonable to assume that the source DC supply voltage was in excess of 5 KV. If the Ignitrons were connected so that they would self-trigger by connecting the igniter to the anode, then there would be a sudden break-over pulse every time the voltage difference between the anode and cathode reached about 1500 V DC. This would imply that the source supply voltage was at least no lower than 8 KV.

Since there was a concerted effort to turn down the auto-transformer after reaching 5 KV, I would guess that E.V. Gray was charging his custom capacitors right to their design limits.

Auxiliary Capacitors:



COMMENTARY: In this photo, note the “Projectile Cart” on the left. Six different types of projectile are launched from this demonstration platform. The bottom of this cart contains a pretty substantial capacitor bank array. You can see only 70% of the cart.

This would imply that there are about 9 large capacitors in the first rank. If two rows are employed, then a total of 18 capacitors are needed. I suppose this sort of stored energy was needed to support the “Hover” demonstrations or the large 71 lb launch.

Mark Gray claims that this cart was in E.V. Gray’s possession at the time of his death. He plans to enquire among family members as to where this piece of equipment went.

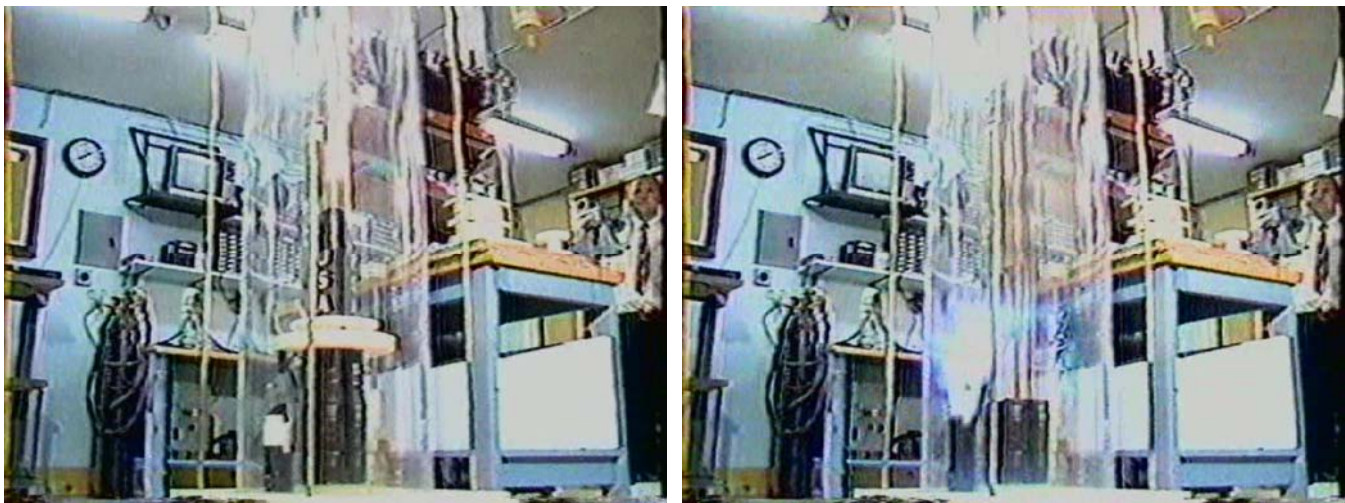
COMMENTARY: It is my contention that if this cart was saved from the one way trip to the surplus re-seller, then who ever got it couldn’t make it operational. According to Mark Gray, his father spent his last days disassembling this equipment. This system would be high on the list of things to do first.

“Split the Positive?”

When asked if his father ever told him about the fundamental energy conversion process Mark Gray recalled one experience where his father told him “The energy starts from the positive terminal [of the storage capacitor/dipole] then part of it goes back to the supply battery and part of it goes to the load

COMMENTARY: This type of topology is shown in patent 4-595-975, but the actual technical meaning is anybody’s guess.

The “Wireless Projectile”



Mark Gray claims that some potential investors would ask “What good is this system if you have to have wires connected to projectile? That is not going to work”. So he developed this demonstration apparatus to show that the projectiles really didn’t need wires. Actually, they are needed for only a short distance, beyond which the magnitude of the repulsive forces drops off quickly. The above setup provided a sliding contact that is in the little black & white tower on the left of the larger black cylinder. This arrangement allows for about 6-8” of travel before electrical contact is broken. By that time, the travelling mass has received most of the shock impulse it is going to get. The black repulsing coils are composed of copper magnet wire that is about 2” deep. The outside is covered with black vinyl electricians tape. Mark also said that it was hard to reconnect the sliding contact because of rotation after a shot. Apparently it took a broom stick and a ladder to rest the demo.

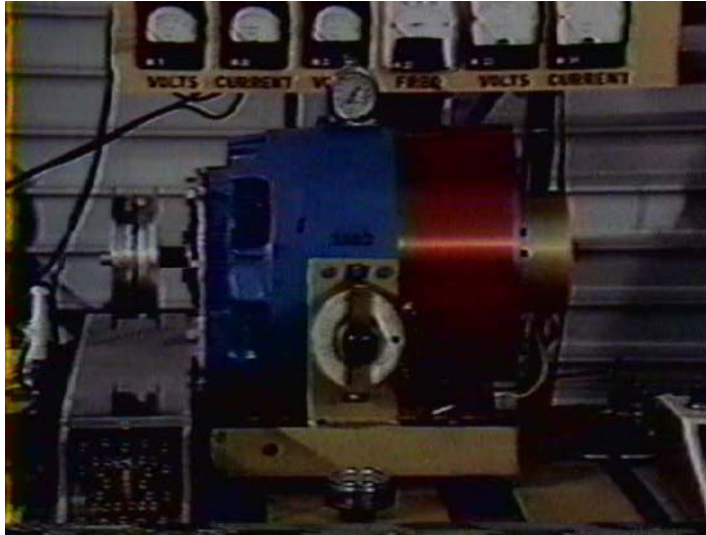
COMMENTARY: The measurable voltage of the energy that propelled the small black cylinder on top with the (white plastic saucer on the bottom) was said to be 5KV. Now look at the length of the arc trail [about 12”] of the little contact tower (at the left) after lift-off. Consider what kind of voltage was being generated at this point.

The State of the Storage Batteries prior to a test or demonstration for a Motor Cart

“When a motor cart was prepared for a test (or demonstration) both sets of batteries were fully charged”

COMMENTARY: So much for the idea of having to start with a dead battery. This theory comes from the idea that the lead-sulfite was the medium that might have converted a pulse of classical electricity into “Cold Electricity”

Another Cold Electricity Demo using the “Start Motor”



The white round dial instrument sitting on top of the “Start Motor” on the Multi-demonstration Cart is a thermometer. The other round dial instrument lying down on the table just below the round rheostat is a mechanical RPM indicator. [Biddle Meter]

The Importance of the Spark Gap

E.V. Gray told Mark Gary that the spark gap was very important.

COMMENTARY: A lot of other researchers think so too.



The Purple Motor



A Family Group Photo

Motor Names:

While the older E.V. Gray motors were numbered, the newer versions in the 80's were named according to a color. There was the Red Motor, The Blue Motor, The Purple Motor, The White Motor and the Black Motor. Each one was intended to demonstrate some particular aspect of this technology or head off any common questions that had continually arisen over the years.

Stump the Expert Time:

Once, a professional researcher, from MIT, was allowed to examine the equipment while development was taking place in Canyon Country, CA, (Possibly for some investor review). He had flight arrangements to leave the following Monday and had the whole weekend plus a day for his investigation. Apparently there were no restrictions placed on what he could look at. This man was alleged to be one of the co-inventors who developed the first anti-shark repellants. He examined and observed for at least one whole day and then made a comment to the effect, "If I can't figure this out, then all of my academic training is worthless". He worked all through the weekend and left the following Monday with no tentative classical explanation.

COMMENTARY: It would sure be nice to see if this individual would grant a phone interview. I'm sure he didn't talk a whole lot about his experience when he returned to Boston. I wonder if he would now?

Other Questions Asked through e-mail:

To your knowledge did your father (or his assistants) own or use any of these common electronics shop instruments?

*Oscilloscope
Radio Frequency (RF) Generator
General Signal Generator
Pulse Generator
Transistor Tester
Q-Meter
Grid Dip Meter
Frequency Meter
Digital counter
Capacitor Tester
Battery Tester
Spectrum Analyzer
DC Power Supply*

Of course any information about a general description, perhaps a Make and Model number (ha,ha), and an idea as to what the instrument was used for. When it was used and by whom.

Response 1) There were some meters involved, but I do not remember what meters might have been used or for they would have been used for.

2) The "kernel" of the technology appears to reside on the circuit trigger boards and the specific wiring to the off board components. From the photos we know that large power transistors were used. It is pretty obvious that other board components were used as well.

Do you happen to know what kinds of major components were on these boards? *We can assume that there were a number of supporting resistors and small capacitors*

Silicon controlled Rectifier (SCR)

Control Relays

Large Power Resistors

Transformers

Inductors or Chokes

Radio Frequency Coils

Vacuum Tubes

Diodes

Rectifiers

Power MOSFETS

Varistors

Potentiometers - Variable Resistors

Others

Model number of Power Transistors?

Of course a general description, approximate count, and any idea as to their function would be helpful.

Response 2) The most knowledgeable on the circuit boards may be Nelson 'Rocky' Schlaff (or Schlaff) from the Los Angeles area. I do remember that the circuit boards were developed in Canyon Country and for awhile the services of an electronics consultant was acquired to help development some of this circuitry. I do not remember the name of the consultant.

3) *We know that you did a majority of the work on this equipment.*

Was there any specific part of these "Carts" that your father reserved for himself to work on exclusively?

Response 3) Actually, my father did not protect any specific area of any of the technology that I can remember. Many people had cast their eyes on and all over the technology that was built. Nelson Schlaff and myself did most the assembly of the technology. There were others from time to time that were involved with the technology built.

4) *Concerning the "Trigger Cart". You said that during its operation you would charge a certain capacitor to 5,000 volts before launching a projectile. You also said the voltage input was 220V AC. Here are some general questions about the over all construction of the cart.*

What Size Breaker was needed to power the "Trigger Cart" 30 Amp, 40 Amp, 50 Amp, higher?

Was a transformer use to raise the voltage from 220V AC to a higher voltage?

If 5,000 volts was the final measurable output voltage, then was there a higher voltage used somewhere else in the circuit that you know of?

Were Inductors or "Chokes" included on this Cart?

Did you ever have to make repairs on the "Trigger Cart", if so what was replaced and how often?

There are 4 "Ignitrons" on the Trigger Cart. Were all of these used at all times, or did different demonstrations use a different number of these devices?

Response 4) The only thing I remember about the voltage was charging the capacitors to 5,000v ?? for a one-time discharge (propulsion of a magnet), however, the hovering of magnets was achieved by a constant firing of the tubes.

5) Concerning the origins and nature of the transistor circuit boards used for the "converters".

Were these circuits made in house or contracted out? Did you make them? Did the design change over the years? If these boards failed who repaired them? Were replacements kept on hand?

Response 5) I do not recall much, if any was needed, maintenance on the circuit boards, nor do I recall having any made up as spares. I believe that all R & D and constructions of the technology happened in-house.