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APPEARANCES:

GEORGE GRAINGER, UMTA, REGION 9
ALEX E. LUTKUS, CALIFORNIA PUC
ERNIE VON IBSCH, CPUC
JOEL SANDBERG, SCRTD
JOE REYES, SCRTD
W. C. LEBECK, LAFD
GARY J. SALYER, LAFD
RALPH S. WEULE, BARTD
EDWARD FARRELLY, PATH
GEORGE DONATO, MUCTC
WILLIAM RHINE, SCRTD
RUDD MC FARLAND, SCRTD
JOHN THOMPSON, WMATA
AL LOCK, MARTA
PAUL GOTTFRIED, BOOZ, ALLEN
RAMESH THAKARAR, SCRTD
DOUGLAS LOW, SCRTD
NEAL RICHARDS, SCRTD
DICK GALLAGHER, SCRTD

LOS ANGELES, CALIFORNIA, THURSDAY, OCTOBER 15, 1981

8:30 A.M.

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MR. MC FARLAND: WE HAVE A DIFFERENT FORMAT THIS MORNING. I WOULD LIKE TO DISCUSS ISSUES THIS MORNING IN OPEN FORUM AND IN PARTICULAR VENTILATION REQUIREMENTS, EMERGENCY VENTILATION REQUIREMENTS, EMERGENCY EVACUATION, EMERGENCY COMMUNICATIONS, FIRE MANAGEMENT, AND PUNCTUAL REQUIREMENTS OF CENTRAL CONTROL DURING EMERGENCIES. IF WE COULD GET SOME FEEL OF YOUR DIRECTION ON THAT, I THINK THOSE ISSUES -- IF SOMEONE WOULD LIKE TO KICK AROUND WITH YOU ON THE VENTILATION, I AM PARTICULARLY SENSITIVE TO THE NEED FOR MIDLINE SHAFTS.

IN THE PRESENTATIONS YESTERDAY I NOTICED THE MAJORITY OF THE SYSTEMS THAT WERE DISCUSSED INCORPORATED MIDLINE SHAFTS. WE ARE LOOKING AT SEVERAL ALTERNATIVE MANAGEMENT TECHNIQUES TO REDUCE TRACK ENERGY REQUIREMENTS DURING OPERATION. ONE OF WHICH IS VERTICAL PROFILING DROPPING OUT, CLIMBING IN.

ONE OF THE INCREMENTAL CAPITAL COSTS THAT WOULD BE INCURRED WOULD BE THE DEEPER MIDLINE SHAFTS. IT WOULD BE REQUIRED WITH VERTICAL PROFILING AS OPPOSED TO THE SHAFT WITH NON-VERTICAL PROFILING AT THE TIME THE RUNNING TUNNEL WOULD BE SHOWERED. WE HAVE ON THIS PROFILE, ON THE WALL -- THE DOTTED LINES REPRESENT ONE DRAFTSMAN'S CONCEPT OF WHAT A VERTICAL PROFILING SYSTEM WOULD LOOK LIKE WITH AN R-18 MILE STARTER LINE UTILIZING, I THINK, A 6 PERCENT GRADE AND GOING DOWN NO MORE THAN, I THINK, IT'S A HUNDRED FEET.

THE GRADES -- I AM CURIOUS. RALPH'S EYES JUST WENT UP. IT'S BEEN FASCINATING LOOKING AT THE STUDIES ON GRADES. WE HAVE PEOPLE LIKE CLOUDER NOW COMING BACK TO US SAYING, "WHAT IS WRONG WITH 6 PERCENT?" WHEREAS A YEAR AGO THEY WOULD GO, "HOW MUCH?" WE CAN PUSH OUT AN EMPTY TRAIN. WE CAN PUSH OUT A FULL TRAIN WITH AN EMPTY TRAIN ON 6 PERCENT GRADE. THAT WAS THE LIMITATION. THAT WE WOULD HAVE TO HAVE PUSH-OUT CAPABILITY AND WE WOULD HAVE TO HAVE IT IN THE SHORTEST PERIOD OF TIME WHAT GRADE WE WOULD HAVE A HIGH PROBABILITY OF BEING ABLE TO PUSH OUT A LOADED TRAIN WITH AN EMPTY TRAIN, AND 6 PERCENT IS NOT AN EXTREME CASE. WE WANTED TO MINIMIZE ANY OPERATIONAL CONSTRAINT. IF FINE, WE BUY LOW OPERATION COSTS, BUT WE TOTALLY DESTROY MIDWAY, HEADWAY CAPABILITIES, THOUGH, THAT IS COUNTERPRODUCTIVE. LOOKING AT THOSE TWO CONSTRAINTS, IT CONTRAINS AN UPPER LIMIT IN TERMS OF MOTOR CONTROL FAILURE ALSO.

WE ARE STILL IN THE PROCESS OF TAKING A HARD LOOK AT VERTICAL PROFILING, AT REGENERATION, AT COSTING, AT OTHER CONTROL LOGICS THAT WOULD ALLOW US TO REDUCE THE TRACK ENERGY REQUIREMENTS. WE CAN KEEP ASKING BILL FOR A LITTLE DEVICE ON THE SIDE THAT WILL ABSORBE ALL THAT ENERGY. BUT IF WE, IN THE EMERGENCY VENTILATION, HAVE A DEFINITE NEED FOR MIDLINE SHAFTS, IT PUTS A WHOLE DIFFERENT PROSPECTIVE ON US. AND AGAIN, WHAT I HEAR IS I DON'T THINK THERE IS ANY OPTION OTHER THAN THE 14,000 FOOT TUNNEL. WE HAVE TO DRILL, I WOULD GUESS, FOUR OR FIVE HUNDRED FEET. WE WOULD HAVE TO LOOK AT THE ALTERNATIVE ENGINEERING COST, AT THE OTHER OPTIONS TO A MIDLINE SHAFT, SUCH AS TRAIN DOORS AS SOME SORT

OF AN EMERGENCY ESCAPE FOR PASSENGERS IN THE TUNNEL. YOU CAN GO INTO A CHAMBER, WHICH I TOTALLY REJECTED UNTIL SOMEONE YESTERDAY MENTIONED THIS IS A CONCEPT THAT IS NOT OUT OF THE QUESTION.

THE GEOLOGY IN GENERAL IS GOOD. IT APPEARS THAT WE ARE AT NO BIG ADVANTAGE IN A SINGLE TRACK VERSUS A DOUBLE TRACK. FROM A VENTILATION STANDPOINT, THEN, I THINK WE GO TO A SINGLE-TRACK TUNNEL, TWO SINGLE-TRACK TUNNELS. THAT, PLUS THERE ARE AREAS IN THE BASIN WHERE WE ARE GOING TO HAVE METHANE GAS PROBLEMS. THERE ARE A NUMBER OF DEPLETED OIL SHALE AREAS. YOU DIG INTO THEM AND THE CREW WILL STILL SEE THE SHALE AND A LOT OF METHANE GAS. AND I THINK THAT IS SOMETHING WE ARE GOING TO BE FACED WITH.

I BELIEVE THAT YOU MENTIONED MONTREAL HAD A SECTION OF TUNNEL -- WAS IT MONTREAL? AM I WRONG, GEORGE -- OF METHANE GAS?

MR. DONATO: METHANE GAS. NO. WE DIDN'T HAVE METHANE GAS. SOME OF THE PROBLEMS WE HAD -- WE HAD INFILTRATION OF GASOLINE IN THE SUBWAY.

MR. MC FARLAND: FROM LEAKY TANKS?

MR. DONATO: WE HAD THIS PROBLEM AND WE DEALT WITH IT BY PASSING A BYLAW WHEREBY SOME OF THE TANKS TOLD US THAT IT WOULD BE REMOVED. OTHER THAN THE TANKS THAT WERE MORE UNDER, FOR INSTANCE, 500 FEET, THE SUBWAY WOULD BE TESTED ONE YEAR WITH A HYDROSTATIC METHOD TO MAKE SURE THEY WERE NOT LEAKING. AND THIS DOES REDUCE A LOT OF LEAKS, PLUS WE STILL HAVE SOME, BECAUSE OUR SUBWAY IS VERY DEEP, AND IT'S NOT REALLY SEALED TIGHT. WE PUMP A LOT OF WATER. WE HAVE A LOT OF

INFILTRATION OF WATER. SO IF A TANK IS LEAKING, WE ARE BOUND TO GET GASOLINE IN OUR SUBWAY.

MR. MC FARLAND: WHAT PRECAUTIONS DO YOU TAKE?

MR. DONATO: WELL, THE FIRE MARSHAL HAS THE ALTERNATIVE TO IMPOSE THIS BYLAW AND INSPECT ALL THE STATIONS, THE GAS STATIONS BELOW THE SUBWAY. THIS IS DONE BY THEM. WE HAVE AN INSPECTOR. THERE IS AN INSPECTOR THAT DOES THE TESTING ONCE A YEAR. IF EVER WE HAVE A PROBLEM, YOU SMELL IT PRETTY FAST, YOU KNOW. AND IT'S REPORTED TO YOU. WE CALL THE FIREMEN. WE GET THEM ON THE SCENE. AND WE GO WITH THEM TO THE STATION WHERE WE FEEL THAT THERE IS A PROBLEM. AND WE USUALLY GET IT BACK THERE WITHIN A DAY TO GET A TANK OUT TO PUMP. THE FIREMEN HAVE FULL AUTHORITY TO CLOSE THE PLACE COMPLETELY AND TO GET EQUIPMENT ON THE SITE IF THERE IS A LEAKY TANK TO REMOVE THE TANK.

MR. SALYER: GARY J. SALYER, L.A. FIRE DEPARTMENT.

WE HAVE HAD A RASH OF UNDERGROUND TANK LEAKAGE PROBLEMS. IT SEEMS LIKE THE ONES THAT WERE INSTALLED A LONG TIME AGO ARE STARTING TO GO NOW. AND IT MIGHT BE A CONSIDERATION, JUST IN THE FUTURE, THAT THIS IS HAPPENING MORE THAN I EVER THOUGHT IT WOULD.

MR. DONATO: WE COULD, IF YOU WANT, COPY THE BYLAWS WE HAVE. IT MIGHT BE OF SOME INTEREST TO YOU.

MR. MC FARLAND: YES.

MR. DONATO: AND HOW WE DEAL WITH THAT PROBLEM. IT IS A MAJOR PROBLEM, MORE SO IF YOU HAVE A SUBWAY, BECAUSE A SUBWAY WILL GENERATE STRAY CURRENTS IN THE SOIL. ONE THING YOU HAVE GOT TO MAKE SURE IS THAT YOU GENERATE AS LITTLE AS

POSSIBLE STRAY CURRENTS FROM YOUR TRACKS SO THAT YOU DON'T CREATE PROBLEMS THAT YOU WOULD BE A VICTIM OF.

MR. THOMPSON: JOHN THOMPSON, WMATA.

WE HAVE EXPERIENCE WITH TWO DIESEL TANKS. ONE OF THEM HAPPENED TO COME TO BE ONE OF OUR BUS GARAGES, SO WE HAVE HAD SOME PROBLEMS IN THAT AREA ALSO.

MR. MC FARLAND: WMATA MADE A SHAFT ON THE EAST SIDE OF THE RIVER CROSSING RIGHT BY THE WATER GATE, AND IT WAS ON A SIDE OF A VERY LARGE DIESEL FUEL OIL TANK. IT WAS THERE FOR YEARS AND YEARS. THEY WENT DOWN A GOOD 150 FEET, AND THE GROUND WAS PERMEATED DOWN TO 150 FEET TOTAL. THE HEATING OIL WAS OOZING OUT OF THE ROCK. THEY COULDN'T HAVE PICKED A BETTER SPOT.

MR. THOMPSON: WE HAVE JUST HAD THREE INCIDENTS. I DIDN'T KNOW ABOUT THAT.

MR. MC FARLAND: AS I SAID, AGAIN, WE HAVE DONE VERY MUCH THINKING ABOUT THE PROBLEM, BUT THERE WILL BE SHALE AREAS IN THE BASIN THAT HAVE ACTIVE METHANE. AND WE ARE GOING TO HAVE TO DO SOMETHING. I DON'T KNOW OF ANY OTHER SYSTEM IN THE COUNTRY THAT HAS HAD TO FACE THE PROBLEM. THERE IS NO SUCH THING AS WATERTIGHT TUNNELS. THE GERMANS HAVE TAKEN UPON THEMSELVES FOR YEARS TO HAVE WATERTIGHT TUNNELS, AND THE COST IS ASTRONOMICAL. AND THEY STILL HAVE LEAKS. IF THEY CAN'T KEEP WATER, WE CERTAINLY CAN'T.

DO YOU ALL RECALL THE CASTAIC TUNNEL IN THE EARLY 50'S WHERE 25 MINERS WERE KILLED IN THE WATER TUNNEL COMING IN THE VALLEY. THEY WERE IN A SHALE. I DON'T THINK IT WAS METHANE. IT WAS PETROLEUM GAS. THE DIFFERENCE WAS THAT

IT WAS LIGHTER THAN AIR. THE BUREAU OF MINE SAFETY WAS THERE AND THEY HAD THEIR SNIFFERS UP. AND THEY HAD AN EXPLOSION.

MR. DONATO: ONE THING WE DO IS AS SOON AS WE HEAR ABOUT THE TROUBLE, WE HAVE THE INSPECTOR THERE TO EXPOSE THE METER, AND THEY MAKE READINGS. AND LATER ON THE FIREMEN CAN COME ALSO AND THEY MAKE READINGS. IF WE FIND ANY EXPLOSIVE LEVEL IN THE SUBWAY, WE SHUT DOWN OUR ENTIRE OPERATION. BUT USUALLY, UNTIL NOW, WE DIDN'T HAVE GASES. WE HAD GASOLINE.

MR. MC FARLAND: YOU SHUT DOWN OPERATIONS?

MR. DONATO: WE SHUT DOWN. WE DIDN'T SHUT IT DOWN YET AT THE TRACK LEVEL. IT WAS NEVER EXPLOSIVE. THERE COULD BE A LEAK COMING IN WHERE YOU HAVE GASOLINE FOR INSTANCE. WE USE DETERGENTS IN THE WATER. AND IN SOME CASES WE HAVE SHUT DOWN OPERATIONS.

I REMEMBER WE HAVE SHUT DOWN OPERATIONS IN SOME CASES. YEAH. BECAUSE OF GASOLINE.

MR. RICHARDS: IN CONNECTION WITH THIS SYLMAR EXPLOSION, THAT WAS IN '71.

MR. MC FARLAND: '71.

MR. RICHARDS: AND THE GAS THAT CAUSED THE EXPLOSION THERE HAS BEEN FOUND AT SEVERAL LOCATIONS.

MR. MC FARLAND: IT IS A PETROLEUM BY-PRODUCT GAS LIGHTER THAN AIR.

MR. RICHARDS: THIS IS THE GEOTECHNICAL INVESTIGATION IN THAT WE ARE REVIEWING THE REPORT NOW. SO WE HAVE TO HAVE THE IDENTICAL CONDITIONS THAT CAUSED THE SYLMAR EXPLOSION ALONG WITH OUR ASSIGNMENT.

MR. MC FARLAND: THE CONSTRUCTION WILL BE HANDLED, I AM SURE, BY THE BUREAU OF MINE SAFETY WHICH WAS THE GROUP THAT WAS BROKEN OFF FROM THE BUREAU OF MINES IN 1970.

THEY ARE A VERY ACTIVE SAFETY ORGANIZATION INVOLVED IN ANY UNDERGROUND CONSTRUCTION WHERE THERE ARE GASES. THEY HAVE PROCEDURES, MAINTAIN AIR FLOW, REBREATHERS. EVERYBODY IN THE TUNNEL HAS A REBREATHER AND INSPECTORS AROUND SNIFFING.

I AM NOT WORRIED ABOUT CONSTRUCTION, BUT OPERATIONS. I DON'T THINK ANYBODY HAS HAD TO FACE THIS OPERATION. AND WE HAVE A DOOZY OF A PROBLEM.

MR. RICHARDS: IN CONNECTION WITH THIS MINE SAFETY, THE STATE OF CALIFORNIA HAS BEEN IN CONTROL OF THIS FOR A NUMBER OF YEARS. AND THEIR REGULATION, RELATIVE TO CENTRAL VENTILATION MINES, HAS VIRTUALLY ELIMINATED THE POSSIBILITY OF ADDITIONAL EXPLOSIONS PROVIDING THE REGULATIONS ARE FOLLOWED, BEING ABLE TO RECOGNIZE THE GAS LEVEL WHEN IT BECOMES DANGEROUS, AND PROVIDING ADEQUATE VENTILATION SO THEY DON'T REACH THESE EXPLOSIVE LEVELS.

MR. REYES: I WAS BASICALLY GOING TO SAY THE SAME THING. THE HEALTH CARE IN CALIFORNIA PRETTY MUCH REGULATES THAT AREA. THEY TOOK A LOT OF THE STUFF AND INCORPORATED IT IN THE MINE SAFETY.

MR. MC FARLAND: DURING CONSTRUCTION?

MR. REYES: YES.

MR. MC FARLAND: WHAT ABOUT OPERATIONS?

MR. REYES: WELL, I THINK RALPH IS PREPARED TO DISCUSS SOME OF THE THINGS THAT ARE COMING. THE WAY WE SEE IT IS THAT

IT IS NOT TOO FAR OFF. AND SURELY BY THE TIME THIS PROJECT GOES INTO THE CONSTRUCTION PHASE, WE CAN BE CONSIDERING THE USE OF THAT PHASE, BECAUSE I AM SURE THAT WILL PROBABLY BE INVOLVED IN THAT.

MR. MC FARLAND: I HAVE NO CONCERN DURING CONSTRUCTION. I THINK WE ARE VERY, VERY CLEARLY REGULATED. BUT ONCE CONSTRUCTION IS COMPLETED --

MR. WEULE: YOU WILL FIND, DURING YOUR OPERATION, ONCE YOUR CONSTRUCTION IS COMPLETED, THAT THEY HAVE NO JURISDICTION. AND OTHER THAN WORKERS' SAFETY THAT MAY BE INVOLVED, SUCH AS TYPES OF FUELS THAT YOU WOULD USE IN EQUIPMENT UNDERGROUND, THEY HAVE REGULATIONS OVER THAT PUT ON YOUR OPERATIONS. YOU ARE OPERATING TRAINS. WHERE YOU WILL RUN INTO PROBLEMS IS ANY RECONSTRUCTION THAT YOU DO, IMPROVEMENTS, ADDITIONS. THEN YOU WILL FIND THAT THEY HAVE YOU MEET ALL THOSE.

MR. MC FARLAND: I THINK WE HAVE A PROBLEM THAT SURELY THERE IS GOING TO HAVE TO BE A MONITORING PROCEDURE IN THE AREAS WHERE WE HAVE HIGH CONCENTRATION DURING CONSTRUCTION. THOSE GASES ARE GOING TO GET INTO THE TUNNEL.

MR. REYES: I HAVE A QUESTION. WHAT IS DONE IN THAT TYPE OF SITUATION? ARE THERE TUNNELS WHERE THERE ARE CONTINUING ENVIRONMENTAL MONITORING SYSTEMS?

MR. MC FARLAND: I DON'T KNOW OF ANY IN THE CONTINENTAL UNITED STATES. I THOUGHT THERE WAS ONE IN MONTREAL. IT MAY HAVE BEEN IN TORONTO WHERE THERE WAS ONE STRETCH OF TUNNEL THAT DID GO THROUGH.

MR. DONATO: WE DON'T HAVE ANY. WE HAD THINGS LIKE

INFILTRATION OF SULFURIC ACID, YOU KNOW. IT WAS A SOURCE OF WATER, SPRING WATER WITH SULFUR IN IT. AND IT SMELLED AN AWFUL LOT IN THE SUBWAY. IT WAS NOT DANGEROUS, BUT IT WAS AN INCONVENIENCE. WE CHANALIZED THAT TO THE PUMPING STATION TO GET RID OF IT. THEY WERE NOT DANGEROUS.

MR. FARRELLY: IN THE DISCUSSIONS OF THIS PROPOSED 130 STANDARD, THERE WAS A GREAT DEAL OF TALK ABOUT THE INTRUSION OF LIQUID IN THE TUNNELS, AND THIS ENTIRE SECTION OF THE STANDARD, AND THE REST OF THAT. BUT THAT IS NOT THE ISSUE IN WHICH YOU ARE RAISING ABOUT METHANE GAS DURING A CONSTRUCTION PHASE OTHER THAN VEHICULAR TUNNELS WHICH MONITOR FOR CERTAIN PRODUCTS. I AM NOT AWARE OF ANY TRANSIT TUNNEL THAT HAS A CONTINUING MONITORING SYSTEM.

MR. THOMPSON: IN THREE LOCATIONS IN WMATA'S SYSTEM WE HAVE A FLAME DETECTOR IN THE SHAFT WHICH OCCURS IN THE INTERSECTION OF THE STREET, SO IF THERE WAS A FAILURE WITHIN THE GRADE OF THE VENT SHAFT STRUCTURE, IT WOULD DEACTIVATE. AND IT COMES THROUGH THE AUTOMATIC FIRE ALARM STRUCTURE.

MR. MC FARLAND: IS ANYONE ELSE FAMILIAR WITH A SENSOR OF ANY KIND, EXPLOSIVE?

MR. SALYER: THE PROBLEM I CAN SEE WITHOUT NOT HAVING A CONTINUOUS MONITORING SYSTEM IS THAT VERY LIKELY IN THE TUNNELS, THE FIRST NOTIFICATION YOU WOULD HAVE WOULD BE THE EXPLOSION OR THE PROBLEM.

MR. MC FARLAND: VERY HIGH ACCELERATION RATE.

MR. THOMPSON: INCIDENTALLY, THE TWO TO THREE FUEL LEAKS THAT WE HAD, ONE OF THOSE DID RESULT IN A FIRE IN THE FUEL IN THE TUNNEL WHICH OCCURRED ON THE BLUE LINE WHEN THE

TRAINS WENT THROUGH A GAP. THAT CREATED AN ARC AND SET THE FUEL ON FIRE.

MR. MC FARLAND: WHAT IS YOUR PROCEDURE?

MR. THOMPSON: THE TRAIN OPERATOR GOT OFF THE TRAIN AND EXTINGUISHED THE FIRE.

MR. MC FARLAND: IF YOUR SENSOR DETECTOR --

MR. THOMPSON: THIS WAS NOT DETECTED BECAUSE IT WAS NOT A COMBUSTIBLE LIQUID AND NOT A FLAMMABLE ONE, SO IT WOULDN'T HAVE BEEN DETECTED BY THE SENSOR IN THE FIRST PLACE. BUT THIS HAD MIGRATED OVER SOME DISTANCE INTO ANOTHER TUNNEL.

MR. REYES: I JUST HAD ONE MORE THING. ONE OF THE PROBLEMS WITH ENVIRONMENTAL EQUIPMENT IS THAT, YOU KNOW, WE ARE TALKING ABOUT TWO OR THREE OR A HALF A DOZEN DIFFERENT GASES THAT HAPPEN TO GET INTO THE SYSTEM. AND THE ENVIRONMENTAL MONITORS ARE GENERALLY ONLY SET UP TO MONITOR SPECIFICALLY ONE OR TWO OF THESE. SO YOU ADD ANOTHER LAYER ON THERE. IF YOU HAVE TWO OR THREE COMBINATIONS, YOU MAY END UP WITH TWO OR THREE SEPARATE SYSTEMS. BUT I BELIEVE IT IS SOMETHING YOU SURELY WILL LOOK AT AS YOU GO THROUGH AND GET A BETTER FEELING. I KNOW YOU HAVE ALREADY DONE SOME OF YOUR BARRING AND WHATNOT. THERE MAY BE SECTIONS IN FACT WHERE IT COMES ALMOST REQUIRED TO DO THAT.

MR. RICHARDS: IN CONNECTION WITH THIS TECHNIQUE, IT HAS BEEN COMPLETE. I DON'T BELIEVE THEY HAVE FOUND TWO DIFFERENT GASES AT ONE GIVEN LOCATION. ALTHOUGH, THEY HAVE FOUND DIFFERENT GASES AT DIFFERENT LOCATIONS. FOR EXAMPLE, THERE IS ANOTHER GAS THAT WAS JUST MENTIONED HERE, H_2S. THEY FOUND THAT IN QUANTITIES IN ONE AREA. SO WE KNOW WE HAVE THE

PROBLEM.

MR. LOCK: AL LOCK FROM MARTA.

DURING REVENUE SERVICE, DURING OPERATIONS YOU HAVE PISTON ACTION OF A TRAIN FORCING AIR WITHIN THE TUNNEL IRRESPECTIVE OF WHAT OTHER VENTILATION YOU HAVE. AND CONSIDERING THAT REVENUE SERVICE ON MOST SYSTEMS, IT IS EITHER 24 HOURS A DAY OR CLOSE TO 24 HOURS A DAY.

DO YOU THINK YOU COULD HAVE AN ACCUMULATION IN A SHORT PERIOD OF TIME THAT WOULD BE DANGEROUS AND COMBUSTIBLE ITSELF?

MR. MC FARLAND: I DON'T KNOW. I THINK IT IS AN INTERESTING POINT. SUCH LOGIC MIGHT PUSH US TO A HIGHER BLOCKAGE RATE. I AM SURE A HIGHER FLOW RATE.

MR. RICHARDS: THE AREA TO WHICH THESE HYDROCARBON GASES EXPLODE IS IN THE ORDER OF 5 PERCENT. AND THAT IS A PRETTY LOW RATIO TO BE HIGHLY EXPLOSIVE.

SUPPOSING YOUR SYSTEM IS ONLY DOWN FOR, SAY, SIX HOURS; YOU SEND THE FIRST TRAIN OUT; IT RUNS INTO A POCKET OF GAS. THERE YOU ARE.

MR. MC FARLAND: WE COULD DEVELOP A STRATEGY, SAY, WHEN THE SYSTEM IS DOWN, WE HAVE NO MORE VENTILATION IN THESE AREAS THAT WOULD MAINTAIN SOME FLOW RATE, AIR FLOW RATE.

I WOULD LIKE TO RAISE A QUESTION. WE HAVE A GREAT VARIATION IN LINE LENGTHS BETWEEN STATIONS. WE GO TO THE SHORTAGE VENT ABOUT 2,640, I BELIEVE. THE LONGEST VENT IS 14,000 FEET.

AT WHAT LENGTH IN REDUCING LINE LENGTH WOULD YOU NOT USE MIDLINE SHAFT, UTILIZE BLAST SHAFT AT YOUR STATIONS

FOR YOUR EMERGENCY VENTILATION REQUIREMENTS AS OPPOSED TO A MIDLINE SHAFT?

MR. THOMPSON: WE HAVE A SHAFT BETWEEN EVERY STATION. IN SOME CASES AS MANY AS TWO. IN ONE CASE WE HAVE 33. IN BETWEEN THE SHORTEST DISTANCE BETWEEN TWO STATIONS IS IN THE ORDER OF 200 FEET WITH THE SHAFT IN THE MIDDLE, WITH VENT STRUCTURES TO HOLD IT TIGHT TOGETHER.

MR. MC FARLAND: DO YOU HAVE A WRITTEN CRITERIA ON THE USE OF THESE SHAFTS OR WHY YOU USE THE MIDLINE SHAFT IN SUCH SHORT SPACES?

MR. RICHARDS: I BELIEVE THAT IS JUST PART OF THE OPERATION. PART OF THE SCENARIO THAT WAS DEVELOPED EARLY ON WAS TO PROVIDE FOR EVALUATION OF HEAT FROM THE TUNNELS INCIDENTAL TO TRAIN OPERATION. AND THEY FELT IT WAS NECESSARY TO INSTALL THEM THROUGHOUT THE SYSTEM.

MR. DONATO: WE HAVE 50 STATIONS AND ABOUT 50 KILOMETERS OF SUBWAYS. AND THE DISTANCE BETWEEN SOME STATIONS IS BELOW A KILOMETER, SO IT COULD BE A THOUSAND FEET. WE HAVE MIDLINE SPAN SHAFTS IN ALL CASES.

MR. MC FARLAND: IN ALL CASES?

MR. DONATO: I SHOULD SAY ONE CASE WHERE THEY COULDN'T BUILD IT, BUT WE ARE VERY UNFORTUNATE ABOUT THAT. THERE SHOULD BE ONE IN BETWEEN EACH STATION. THERE SHOULD BE ONE IN EVERY ENTIRE TRACK. IF YOU WANT TO BE IN CONTROL, YOU SHOULD HAVE THAT. YOU SHOULD HAVE THAT ALSO, I THINK, FOR CONTROLLING YOUR TEMPERATURE IN YOUR SUBWAY.

WHAT WE HAVE IS A SYSTEM WHICH IS NOT REALLY VERY COMPLICATED. WE HAVE A FAN SHAFT IN BETWEEN THE TWO STATIONS.

AND THE THIRD -- WE TRY TO PUT IT IN THE THIRD DISTANCE, DIVIDE THAT INTO THREE PARTS AND IN THE THIRD. AND WE HAVE A VENT SHAFT IN THE STATION, IN THE LARGER AREA OF THE STATION. AND THE SIZE OF THAT VENT SHAFT IN THE STATION -- AND IT IS INCORPORATED IN THE ARCHITECTURE OF THE STATION -- YOU DON'T SEE IT. NORMALLY IT IS 300 SQUARE FEET. AND THIS IS THE FREE AREA. SO IF THERE ARE SOME LOUVERS INSTALLED BY THE ARCHITECT, HE HAS TO PROVIDE FOR A LARGER AREA. IT HAS TO BE 300 SQUARE FEET.

NOW, THIS HAS BEEN VERIFIED WITH THE COMPUTER PROGRAM. SO IF WE COULD REDUCE THIS 300 SQUARE FEET -- BECAUSE IT WAS COSTLY TO BUILD -- IT WAS FOUND BY THE COMPUTER PROGRAM THAT WE COULD NOT REDUCE IT. IF YOU REDUCE IT BELOW THAT, YOU HAVE A VERY BIG REDUCTION AS TO THE EFFICIENCY OF THAT SHAFT. WHY AT 300 FEET -- IT COMES TO 300 FEET -- IS THE SIZE OF OUR TUNNEL. OUR TUNNELS ARE ABOUT 300 FEET. THERE MUST BE SOME RELATION BETWEEN THE TWO. WE USED 300 FEET BY RULE OF THUMB. AND THE COMPUTER CONFIRMED IT WAS 300 FEET. AND WHAT WE DO -- WE GO TO MONTREAL -- IN THE SUMMER THE TEMPERATURES ARE PRETTY HIGH. WE CAN GO UP TO 90, 95 DEGREES. AND WE KEEP THOSE FAN SHAFTS OPERATING DURING THE NIGHT. ESPECIALLY DURING THE DAY, ALWAYS LETTING THE AIR COME INTO THE STATION. AND THE NIGHTS AT MONTREAL ARE VERY COOL. WE COOL THE MASS OF CONCRETE WE HAVE IN THE STATION. AND DURING THE DAY, WE SLOW DOWN VENTILATION, AND THE AIR COMING IN THE STATION AGAIN IS COOL BY THE CONCRETE. SO WE HAVE AN AIR-CONDITIONING EFFECT TO A CERTAIN EXTENT.

THIS WORKS PRETTY WELL. AND MANY, MANY

OCCASIONS IT IS COOLER IN THE SUBWAY THAN IT IS OUTSIDE.

MR. MC FARLAND: DO YOU REVERSE THAT IN THE WINTERTIME?

MR. DONATO: WE GET INTO A PROBLEM, FOR INSTANCE, IF IT IS HOT FOR ABOUT THREE OR FOUR DAYS. IT BECOMES COOL. YOU KNOW, BY THE TIME THE CONCRETE INCREASES IN TEMPERATURE, IT IS VERY HOT IN THE SUBWAY. IT TAKES ABOUT TWO DAYS -- I COULD SEND YOU SOME OF THE FIGURES I HAVE ON THAT. IT MIGHT BE INTERESTING TO LOOK AT.

FOR THE WINTER, WE GO EASY TO 20 BELOW ZERO. THEN WE SHUT DOWN THE FANS COMPLETELY. ACTUALLY, WE HAVE A CHART WHICH WAS GIVEN TO THE OPERATOR OF THE FAN. AND DEPENDING UPON THE TEMPERATURE ON HIS DESK -- AND IT IS THE CONTROL CENTER -- IT IS SHUT DOWN, CERTAIN FANS. HE SHUTS DOWN CERTAIN SHAFTS. AND THIS GOES ON ACCORDING TO THE TEMPERATURE.

FOR INSTANCE, IF WE HAVE A BIG DO AT THE CONCERT HALL AND PEOPLE ARE GETTING IN AT 7 O'CLOCK, HE OPENS THE VENT SHAFT FROM 7:00 TO 7:15 TO MAKE SURE THERE WON'T BE DRAFTS IN THE CORRIDOR.

WE TRY TO KEEP OUR HEAT IN THE SUBWAY IN THE WINTERTIME, BECAUSE IF WE DON'T SAVE IT, THE TEMPERATURE WOULD GO DOWN BELOW FREEZING AND WE WOULD GET INTO TROUBLE.

MR. MC FARLAND: INTRIGUING.

OF COURSE, OUR PROBLEM IS NOT QUITE THAT EXTREME. BUT IT IS VERY INTERESTING.

MR. DONATO: IF YOU ARE NOT CAREFUL, THE AXILLARY ACCESSES IN THE TUNNEL FOR THE PUMPING STATION -- IF YOU LET THE COLD AIR GET IN -- WHEN THE WATER INFILTRATES, THESE

THINGS WILL GET FULL OF ICE IN THE WINTERTIME AND THE ICE WILL GET CLOSE TO THE TRAIN, AND YOU WILL HAVE TO CHOP THE ICE TO MAKE SURE A TRAIN CAN PASS. IT WOULD BE JUST LIKE A GLACIER.

MR. MC FARLAND: ALL OF YOUR RUNNING TUNNEL IS DOUBLE TRACK?

MR. DONATO: YEAH.

MR. MC FARLAND: YOU AT WMATA HAVE SINGLE TRACK TUNNEL?

MR. THOMPSON: YES.

MR. MC FARLAND: ON YOUR MIDLINE SHAFT, DO YOU HAVE TWO SHAFTS? DO YOU HAVE A SINGLE SHAFT WITH DAMPERS?

MR. THOMPSON: WE HAVE A SINGLE SHAFT COMING INTO THE CENTER SECTION OF THE TRACK.

MR. MC FARLAND: THEN YOU CAN'T ISOLATE?

MR. THOMPSON: WE CAN'T ISOLATE ONE TRACK FROM THE OTHER.

MR. MC FARLAND: IF YOU HAD AN EMERGENCY ON ONE TRACK AND YOU WANTED TO EXHAUST THROUGH THAT MIDLINE SHAFT, YOU WOULD BE EXHAUSTING BOTH TRACKS?

MR. THOMPSON: RIGHT. THERE ISN'T ANY REAL SEPARATION BETWEEN THE TUNNELS.

MR. MC FARLAND: YOUR EMERGENCY EGRESS IN ALL CASES IS VERTICAL?

MR. THOMPSON: YES.

MR. MC FARLAND: YOU HAVE NO LATERAL EMERGENCY EGRESS?

MR. THOMPSON: NO. ANOTHER THING ABOUT OUR EMERGENCY EGRESS IS, IN MOST CASES, THE FAN EXHAUST AREA IN THE EXIT PATHS ARE NOT THE COMMON SHAFTS. SO IF THE FAN EXHAUST WAS

EXHAUSTING SMOKE, THAT EMERGENCY EXIT WOULD BE USELESS TO THE PUBLIC.

MR. MC FARLAND: OF COURSE, YOUR LOGIC WOULD SAY, IF YOU ARE EXITING, YOU ARE PULLING SMOKE IN. YOU WOULD WANT YOUR PASSENGERS TO GO TO THE STATION. YOU COULDN'T BE EXHAUSTING IN THAT SHAFT.

MR. THOMPSON: NOT IF IT WAS AN EXIT. IT WOULD COMPOUND THE PROBLEM.

MR. MC FARLAND: IF THERE WAS AN IMPACT IN THAT SHAFT, YOU WOULD BE DIRECTING PEOPLE TO IT?

MR. THOMPSON: IT DEPENDS. NOW, IN SOME OF THE NEWER DESIGNS THEY HAVE SEPARATED THE FAN EXHAUST AREA FROM THE EXIT PATH SO THAT IT IS A COMMON SHAFT WITH A SEPARATION BETWEEN THE TWO, SO THAT PROBLEM DOESN'T EXIST.

MR. MC FARLAND: MR. WEULE, DO YOU HAVE ANY SINGLE-TRACK TUNNEL IN ATLANTA?

MR. WEULE: IN ATLANTA, I DON'T BELIEVE WE DO.

MR. MC FARLAND: HOW DO YOU HANDLE VENTILATION SHAFTS?

MR. WEULE: WE HAVE VENTILATION FOR THE BULK OF OUR OPERATION. I BELIEVE THERE MAY BE EXCEPTIONS WHERE YOU DON'T HAVE MIDLINE SHAFTS. AND THOSE ARE IN STATIONS THAT ARE ESSENTIALLY IN THE DOWNTOWN AREAS VERY CLOSE TOGETHER. WE HAVE BOTH THE STATION VENTILATION SHAFTS AS WELL AS THE LINE SHAFTS.

MR. MC FARLAND: DOES YOUR MIDLINE -- CAN YOU ISOLATE FROM TUNNEL TO TUNNEL IN AN EMERGENCY?

MR. WEULE: YES.

MR. MC FARLAND: DO YOU HAVE AN EMERGENCY EGRESS

LATERAL?

MR. WEULE: LATERAL NOT VERTICAL.

MR. MC FARLAND: NOT VERTICAL?

MR. WEULE: THAT IS CORRECT.

MR. DONATO: YOU TALKED ABOUT VENTILATING SHAFTS. IT IS A SHAFT WITHOUT A FAN OR A FAN SHAFT IS A SHAFT WITH A FAN.

MR. WEULE: WE HAVE BOTH RELEASE SHAFTS, VENT SHAFTS, AND RELEASE AND FAN SHAFTS, AS WELL. THE MIDLINE SHAFTS -- I AM DESCRIBING FAN SHAFTS FOR VENTILATION.

MR. MC FARLAND: WHAT MAXIMUM LENGTH WOULD YOU HAVE BEFORE YOU PUT IN MORE THAN ONE MIDLINE SHAFT? THIS, OF COURSE, WE LOOKED AT FROM THE COMPUTER, BUT IN YOUR EXPERIENCE, YOUR JUDGMENT. FOR EXAMPLE, WE ARE GOING FROM STUDIO CITY TO NORTH HOLLYWOOD. WE HAVE A 12,000-FOOT RUN. WOULD WE CONSIDER A SINGLE MIDLINE SHAFT THERE, SEVERAL MIDLINE SHAFTS?

MR. WEULE: I WOULD HAVE TO GUESS. BUT I THINK WE WOULD BE LOOKING ON THE ORDER OF TWO TO THREE THOUSAND FEET.

MR. MC FARLAND: PER SHAFT?

MR. WEULE: YES.

MR. MC FARLAND: AND THIS WOULD BE PREDOMINANT FROM YOUR EMERGENCY VENTILATION REQUIREMENT, NOT YOUR NORMAL . . .

MR. WEULE: THAT IS CORRECT. AND IN BARTD'S CASE, ALL OF THE LINE-FORCED VENTILATION IS TRULY EMERGENCY, WHILE STATION VENTILATION WAS SET UP TO MAINTAIN MAXIMUM COMFORT, COOLING THEIR EQUIPMENT, AND SO ON. THAT REALLY WASN'T NECESSARY. THE PISTON ACTION OF THE TRAIN, THE NATURAL VENTILATION, IN MOST CASES, WASN'T NECESSARY. SO WE DON'T USE

THE STATION VENTILATION EXCEPT FOR CLEARING SMOKE FROM THE DOWNTOWN AREA. IT GETS A LOT OF EXHAUST GASES.

MR. DONATO: I THINK YOU SHOULD TAKE INTO CONSIDERATION THE CAPACITY OF THE FAN SHAFT. I THINK YOU COULD GO -- WELL, THIS IS GUESSING -- YOU COULD GO MORE THAN A MILE, IF YOU HAVE ONLY AN HOUR WITH ONLY ONE SHAFT, PROVIDING YOU INCREASE CAPACITY.

MR. MC FARLAND: YES.

MR. DONATO: ONE THING THAT WAS NOT DISCUSSED IS THE RELIABILITY OF THE INSTALLATION, AS FAR AS FAILURE.

IN OUR CASE WE FIND IT WAS NOT A LOT MORE EXPENSIVE. IT WAS LESS EXPENSIVE. INSTEAD OF GOING TO ONE LARGE FAN, WE PUT TWO FANS. YOU SEE, WHEN YOU PUT ONE LARGE FAN, YOU NEED ADDITIONAL PROTECTION, LIKE, VIBRATOR DETECTORS. AND THAT FAN, WHEN YOU HAVE TO REPAIR IT, IT IS DOWN FOR A LONGER PERIOD OF TIME. WE PREFER TO USE TWO FANS, GIVING THE SAME CAPACITY.

MR. MC FARLAND: IN A SERIES?

MR. DONATO: NO. IN PARALLEL AND PUSHING AIR IN THE SAME SHAFT WITH EACH DIFFERENT FEED COMING FROM DIFFERENT SOURCES. SO YOU HAVE A CERTAIN AMOUNT OF REDUNDANCY. IF YOU LOSE THE FAN, YOU DON'T LOSE IT, IF YOU HAVE A SMALLER FAN. IF IT IS DEFECTIVE, YOU CAN REPAIR THEM FASTER. IT IS MORE RELIABLE IN THE STATION. AND I THINK YOU COULD GO FOR EVEN PROBABLY A MILE, PROVIDING YOU PUT ENOUGH CAPACITY. BUT IF YOU PUT TOO MANY FANS, SOME BETWEEN STATIONS, YOU CAN COMPLICATE YOUR WHOLE SYSTEM. AND YOU SHOULD TRY TO KEEP IT SIMPLE.

MR. LUTKUS: RUSS, HAVE YOU GIVEN THOUGHT TO THE -- LET'S TALK ABOUT THAT 14,000-FOOT DISTANCE TO HAVING VENT SHAFTS AT THE END WITH A PLENUM BETWEEN THE VENT SHAFTS RUNNING ABOUT 14,000 FEET WITH DAMPERS IN THE PLENUM.

MR. MC FARLAND: WITH AN ENGINEERING STANDPOINT, PROBABLY THE MINIMUM SIZE WE COULD BORE -- THE SMALLEST BORING MACHINE YOU CAN BUY IN ROCK IS 12 FOOT. ROBIN OR JARVEL WILL NOT BUILD SMALLER THAN 12 FOOT. IF YOU HAVE A SMALLER TUNNEL, THEY BACKFILL IT WITH CONCRETE. IF YOU HAVE TOO SMALL A DAMPER, YOU CAN'T WORK WITH IT. ASSUMING A ROCK-BOTTOM PRICE OF 3,000 A FOOT, I HAVE A LOT OF OPENINGS TO LOOK AT BEFORE I WOULD CONSIDER A THIRD TOO. THE MONEY IS ASTRONOMICAL, TWO TO THREE THOUSAND A FOOT. THAT WOULD SIMPLIFY THE VENTILATION IMMENSELY. THE TRADE-OFFS, OF COURSE, WOULD BE MUCH LARGER VENT STRUCTURES WITH THE TWO BORES.

MR. DONATO: ARE YOU TALKING ABOUT REDUCING THE SIZE OF THE TUNNEL TO INCREASE THE PISTON EFFECT?

MR. MC FARLAND: NO. TO HAVE A THIRD BORE THROUGH THE MOUNTAINS OR A VERTICAL SHAFT. WE HAVE HAD GREAT PROGRESS MADE OVER THE LAST DECADE IN RAISE BORING. IT MIGHT NOT BE OUT OF THE QUESTION. RAISE BORING IS GOING THROUGH THE TOP AND DRILLING DOWN WITH A SMALL DIAMETER AND INTERSECTING YOUR TUNNEL, AND DROPPING A PIECE OF EQUIPMENT, A HUGH KELLY BAR, PICKING UP YOUR BORING MACHINE AND PULLING IT UP WITH HYDRAULICS. IT IS VERY, VERY EFFECTIVE IN MINE DEVELOPMENT, TO DRILL DOWN, GRAB YOUR BORING MACHINE, AND PULL IT UP.

IT MIGHT NOT BE OUT OF THE QUESTION. IT IS

SOMETHING THAT SHOULD BE EXAMINED, BUT EVEN IN THE BEST CASE, IT IS EXTREMELY EXPENSIVE. YOU HAVE A TRADE-OFF OF THAT COST AGAINST MUCH, MUCH MORE ADEQUATE PORTAL SHAFTS IN LONGITUDINAL VENTILATION PORTAL TO PORTAL. IT IS DIFFICULT GOING TO AN ENGINEERING TRADE-OFF BASED ON COST.

MR. RICHARDS: HAS ANYBODY HAD ANY EXPERIENCE IN USING IMPACT FANS TO STIMULATE THE VENTILATION IN THE TUNNEL?

MR. MC FARLAND: WHAT KIND OF FANS?

MR. RICHARDS: IMPACT.

MR. DONATO: THEY USE THAT IN EUROPE ALOT IN THE TUNNELS FOR PRIVATE CARS. I HAVEN'T SEEN IT USED --

MR. MC FARLAND: EXCUSE ME, PLEASE, GEORGE. I DON'T UNDERSTAND THE TERMINOLOGY OF AN "IMPACT FAN." AXIAL-FLOW FAN?

MR. DONATO: IT IS USED IN ALL THE TUNNELS.

MR. MC FARLAND: AXIAL FLOW, THEY USE IN THE SALZBURG TUNNEL, THE NEW ALPS TUNNEL. IT ASSISTS YOU IN LONGITUDINAL FLOW.

MR. RICHARDS: I NOTICED THEY ARE ALSO USING THEM IN THE HONG KONG SYSTEM. THEY USE THIS IN LIEU OF SOME OF THE VENTS.

MR. MC FARLAND: IT PROVIDES YOU WITH A BOOST IN LONGITUDINAL FLOW.

MR. DONATO: THAT'S RIGHT.

MR. RICHARDS: THERE ISN'T ANY EXPERIENCE IN USING THAT IN YOUR SYSTEM?

MR. DONATO: NO. WE DON'T USE THAT. THE PISTON EFFECT IS MUCH MORE EFFICIENT. EVEN IF YOU HAVE A BLOCKAGE RATIO WHICH IS NOT REALLY HIGH, YOU CAN HAVE A VERY BIG VENTILATION

WITH A PISTON EFFECT. IN MONTREAL THE FRONTAGE OF A TRAIN IS 100 SQUARE FEET. THE TUNNEL IS 300.

MR. MC FARLAND: ONE-THIRD.

MR. DONATO: AND THE PISTON EFFECT IS VERY IMPORTANT.

MR. MC FARLAND: THIS IS A DOUBLE-TRACK TUNNEL?

MR. DONATO: YES. AND THE PISTON EFFECT OF THE DOORS -- BECAUSE OF THE CLIMATE, WE NEED DOORS IN OUR STATION. THE PISTON EFFECT IS VERY, VERY LARGE. WE HAVE PRESSURE REGULARLY UP TO FIVE POUNDS PER SQUARE FEET. IT IS THE REASON WHY THE GLASS, IN SOME CASES, WILL LOSE THE WINDOW PANES, YOU KNOW. SO WE HAVE A STANDARD, I THINK, THAT IS NO MORE THAN 20 SQUARE FEET FOR GLASS OF MORE THAN THAT.

WE ASK FOR PRESSURE, I THINK, OF 30 POUNDS. THEY CAN SUSTAIN A PRESSURE OF 20 POUNDS PER SQUARE FOOT TO RESIST THE PISTON EFFECT, ESPECIALLY WHEN YOU HAVE THE TRAINS LEAVING THE STATION AT THE SAME TIME. YOU COULD HAVE UP TO SEVEN POUNDS PER SQUARE FOOT. YOU CAN'T OPEN THE DOOR. THE PISTON EFFECT IS A VERY EFFICIENT WAY TO VENTILATE YOUR TUNNEL. BUT WHEN YOU HAVE A PROBLEM AND YOU STOP THE TRAINS, YOU HAVE NO MORE VENTILATION, SO YOU CAN'T RELY ON THAT.

MR. MC FARLAND: YOU HAVE A VERY GOOD BLOCKAGE WHEN YOU STOP THE TRAIN ALSO.

MR. DONATO: YES.

MR. MC FARLAND: IT WAS MENTIONED YESTERDAY BY ONE OF THE SPEAKERS THAT IT IS ESSENTIAL THAT CENTRAL SHOULD HAVE A CLEAR INDICATION POSITION OF DAMPERS AND A SITUATION OF FANS.

MR. THOMPSON: AT WMATA THE FAN SYSTEM IS COMMUNICATED TO BY THE DATA TRANSMISSION SYSTEM. AND THAT SYSTEM

ACKNOWLEDGES THE RECEIPT OF A COMMAND FROM CENTRAL BASICALLY AT THE RELAYS THAT ARE IN THE PANEL. BUT ONE OF THE FLAWS TO THIS IS, IT DOESN'T TELL YOU IF YOU HAVE FAN OPERATION. AND IT DOESN'T INDICATE THAT YOU HAVE ANY AIRFLOW ACROSS THERE. IN KEEPING WITH THIS, THERE IS ALSO AN INDICATOR SYSTEM ATTACHED TO THE DAMPERS, THAT IS, A RELAY CLAMP SWITCH THAT OPERATES A LOUVER MOVEMENT OR MERCURY SWITCH ATTACHED TO THE LOUVER BLADES. AND YOUR MERCURY SWITCH IS MUCH BETTER, BECAUSE IT IS MORE ACCURATE.

ONE THING BEING DISCUSSED NOW IS THE ADDITION OF AN AIR VENT SWITCH IN THE PATH OF THE DISCHARGE FAN THAT WOULD INDICATE, SWINGING ONE WAY OR THE OTHER, THAT THE FAN WAS ACTUALLY IN OPERATION EQUIPPED WITH THE RECEIPT IN THE RETURN OF AN OPERATOR COMMAND. BUT PRESENTLY, RIGHT NOW, WE CAN ONLY TAKE ITS WORD FOR IT THAT IT IS IN OPERATION. WHAT THE PROBLEM HERE IS THAT THE FAN ITSELF COULD ACTUALLY BE SHUT DOWN, NOT HAVE ANY POWER ON IT, BUT THE COMMAND WOULD BE RECEIVED AND ACKNOWLEDGED AND YOU WOULD RESULT IN A FALSE SENSE OF SECURITY.

MR. DONATO: AT MONTREAL WE HAVE A COMPUTER TO CONTROL THE FANS. AND AS I MENTIONED YESTERDAY, WE IMPOSE A CRITERIA THAT WE SHOULD BE ABLE TO POSITION MANY FANS, UP TO 20 FANS, IN A MATTER OF TWO MINUTES. THIS IS NOT YET POSSIBLE. THEY HAVE ON THE COMPUTER TO DO THAT. AND THEY SAY THEY WILL BE ABLE TO GIVE US THAT.

THE TELECOMMUNICATIONS SYSTEM GOES TO THE FAN AND CLOSES THE CIRCUIT. AND THEIR FEEDBACK OF THE FAN IS ACTIVATED, COMING BACK TO CONTROL CENTER TO TELL THEM THAT

REALLY THE FAN IS ACTIVATED.

MR. MC FARLAND: DO YOU HAVE A SENSOR?

MR. DONATO: NO. WE DON'T HAVE DAMPERS.

MR. MC FARLAND: JUST THAT THE SWITCH HAS BEEN CLOSED?

MR. DONATO: THE SWITCH HAS BEEN CLOSED. AND I AM NOT SURE, BUT PROBABLY THAT THE CURRENT IS FLOWING.

MR. RHINE: THAT IS PROBABLY BETTER INSTRUMENTATION.

MR. THOMPSON: I AGREE WITH THAT. FOR SOME REASON THEIR PARTICULAR LEANING IS TOWARD A VENT SWITCH.

MR. DONATO: ONE PROBLEM YOU COULD HAVE WITH THE VENT IS THAT IT TAKES A CERTAIN AMOUNT OF TIME TO ACT. AND IF YOU WANT TO OPERATE THE FAN, YOU HAVE TO STOP IT FIRST. AND TO STOP, IF YOU WANT TO KNOW IF IT IS STOPPED, YOU HAVE TO WAIT UNTIL IT IS STOPPED COMPLETELY OR THE VENT WILL TELL YOU IT IS STILL OPERATING. AND YOU WOULDN'T BE ABLE TO COME IN WITH THE OTHER OPERATION.

ONE IMPORTANT THING, WHEN YOU TALK ABOUT RELIABILITY, IS THE MOTOR FAN SHOULD NOT BE PROTECTED BY TERMINAL RELAYS. THIS IS SOMETIMES OVERLOOKED. AND YOU HAVE EXHAUST, HOT AIR. AND THE HOT AIR HEATS THE MOTOR AND STOPS THE FAN.

MR. MC FARLAND: IF THERE IS A THERMAL OVERLOAD SWITCH, IT SHOULD BE THERMALLY LINED.

MR. THOMPSON: ONE THING ABOUT THE WMATA SYSTEM IS, FIRST OFF, IT IS TEMPERATURE CONTROLLED. AND IT IS DESIGNED TO GO AS 90 DEGREES AND SHUT DOWN AFTER IT HAS REDUCED THE TEMPERATURE IN THE TUNNEL. ONE OF THE PROJECTED MODIFICATIONS TO THIS SYSTEM IS THE REMOVAL OF ALL THIS TEMPERATURE CONTROL

EQUIPMENT AND TO DEPEND COMPLETELY ON REMOTE ACTIVATION OR LOCAL SWITCH AND NOT HAVE THE TEMPERATURE-INDUCED OPERATION AT ALL. MAINLY BECAUSE OF SOME OF THE PROBLEMS THAT HAVE BEEN ASSOCIATED WITH IT AND THE FACT THAT IT IS BECOMING VERY COMPLEX.

AND ANOTHER THING ABOUT THIS IS, IF WE HAVE A SHAFT WITH SIX FANS IN IT, THIS SYSTEM WILL SEQUENTIALLY FIRE EACH FAN IN RESPONSE TO A LACK OF DECREASE IN TEMPERATURE. IF THE TEMPERATURE REMAINS AT 90 DEGREES, IT WILL FIRE THE NO. 2 FAN. AND ONE OF THE PROBLEMS WITH THIS IS, IF ONE OF THESE FANS FAILS TO OPERATE, THERE IS NOT A SYSTEM WHEREIN THE DAMPERS ON THAT WOULD CLOSE, SO YOU WOULD HAVE A SHORT-CIRCUITING EFFECT BACK TO THE FAN THAT FAILED TO OPERATE AND REDUCE THE EFFECTIVENESS OF THE VENTILATION SYSTEM. SO THEY ARE CONTEMPLATING REMOVAL OF A LOT OF THIS TEMPERATURE CONTROL EQUIPMENT.

MR. MC FARLAND: MR. WEULE, DO YOU HAVE A SIMILAR SYSTEM IN YOUR UNDERGROUND TUNNEL?

MR. WEULE: ESSENTIALLY YOU ARE LOOKING AT A FEEDBACK MECHANISM TO INFORM YOUR CENTRAL CONTROL THAT HE DOES HAVE OPERATION. AND I THINK THAT IS SOMETHING THAT IS CRITICAL. YOU CAN'T JUST RECEIVE THE COMMAND. FOR INSTANCE, THERE ARE FOUR EXHAUST FANS THAT I DESCRIBED PLUS FOUR LINE FANS THAT FEED INTO THE BORES. THAT WAS ESSENTIALLY EIGHT SEPARATE COMMANDS THAT THE CONTROLLER HAD TO MAKE. YOU ALWAYS HAVE THAT FOUR IN THAT CONFIGURATION, SO WE REPROGRAMED TO ALLOW ONE COMMAND TO OPERATE ALL FOUR. AND THEREBY IT CUTS HIS TIME AND ALSO THE ABILITY FOR MISTAKES, WE FOUND. WE ARE LOOKING

AT OTHER AREAS OF THE SYSTEM TO DO THE SAME THING.

THERE ARE AS MANY AS 19 FANS THAT WOULD HAVE TO BE OPENED SHOULD THERE BE A FIRE CONDITION IN THAT AREA. SO YOU CAN SEE THAT 19 INDIVIDUAL COMMANDS WOULD TAKE A CONTROLLER QUITE A BIT OF TIME TO EXECUTE. SO WE ARE AUTOMATING THOSE. WE ARE NOT LOOKING AT COMPLETE AUTOMATION. WE STILL WANT TO MAINTAIN SOME FLEXIBILITY IN THERE, BUT WANT TO SIMPLIFY IT AS MUCH AS POSSIBLE.

MR. MC FARLAND: DO YOU HAVE ZONE CONTROL BY YOUR OPERATORS IN THE VENTILATION, OR DO YOU HAVE ONE GROUP OF OPERATORS CONTROLLING YOUR ENTIRE SYSTEM?

MR. WEULE: WE HAVE ONE GROUP OF OPERATORS CONTROLLING A SYSTEM. WE HAVE A TRUE CENTRAL CONTROL. THAT IS ONE PHYSICAL LOCATION.

MR. DONATO: SAME THING IN MONTREAL.

MR. WEULE: THE CONTROLLERS THAT OCCUPY THAT ONE SPOT, ONE ROOM CONTROL TOWER, CONTROL OUR ACCELERATING EQUIPMENT, MOSTLY EMERGENCY EQUIPMENT AS WELL AS COMMAND CONTROL, AND A LOT OF THE SUPPORT ACTIVITY POWER DISPATCHING, MAIN LINE TROUBLE-SHOOTING -- ALL THAT IS DETONATED FROM THAT ONE CENTRAL SYSTEM.

MR. MC FARLAND: MR. LOCK, YOU MENTIONED YESTERDAY YOUR ZONE SECURITY.

MR. LOCK: YES.

MR. MC FARLAND: HOW MANY STATIONS DO YOU HAVE IN A ZONE?

MR. LOCK: WE UTILIZED THE ZONE CENTER CONCEPT FOR SECURITY. WE HAVE A CENTRAL CONTROL THAT IS RESPONSIBLE FOR

TRAIN CONTROL, ELECTRIFICATION, SUPERVISOR CONTROL FUNCTIONS AND COMMUNICATIONS. IN OUR ZONE CENTER THE RESPONSIBILITY OF THE ZONE CENTER IS ASSOCIATED WITH SECURITY.

WE HAVE CC-2 MONITORS, VIDEOTAPING EQUIPMENT. WE HAVE A COMMUNICATIONS CONSOLE THERE WHICH PROVIDES FOR PASSENGER ASSISTANCE VIA THE PAY TRAIN ASSIST PHONES. WE HAVE THE SAME COMMUNICATION CONSOLE PROVIDED FOR POLICE ASSISTANCE VIA THE SECURITY FENCES THAT ARE LOCATED IN THE STATIONS. AND THE ZONE CENTER ALSO SERVES AS A PRECINCT HEADQUARTERS FOR THAT GROUP OF OFFICERS THAT ARE ASSIGNED TO THE REGION. THAT BASICALLY IS THE FUNCTION OF THE ZONE CENTER.

WITH RESPECT TO OUR CENTRAL CONTROL CONCEPT, OUR CENTRAL CONTROL CONCEPT, AS I SAID, PROVIDES FOR TRAIN CONTROL. HOWEVER, WE DO NOT HAVE AN AUTOMATED LINE SUPERVISION FUNCTION WITH RESPECT TO TRAIN CONTROL. SO ALTHOUGH WE PERFORM LINE SUPERVISION OUT OF CENTRAL, IT IS NOT NECESSARY INSOFAR AS THE OPERATION OF OUR SYSTEM IS CONCERNED. IN A SIMILAR SENSE, ALTHOUGH WE PERFORM, YOU KNOW, CONTROL OF ELECTRIFICATION OUT OF CENTRAL, WE STILL, AT THE INDIVIDUAL SUBSTATIONS, OF COURSE, HAVE ACCESS TO THE BREAKERS. AND WE CAN PERFORM THE SAME FUNCTION ON SITE RATHER THAN REMOTELY. AND THIS IS ALSO TRUE WITH FAN CONTROLS AND SO FAR AS OUR VENTILATIONS FANS ARE CONCERNED, THEY ARE NORMALLY OPERATED REMOTELY AT CENTRAL CONTROL. MANY OTHER SUPERVISORY CONTROL SYSTEMS HAVE REMOTE TERMINAL UNITS THAT ARE LOCATED AT EACH TRAIN CONTROL SWITCH WHICH IS ASSOCIATED WITH EACH STATION IN OUR SYSTEM. THERE IS ONE IN EACH SUBSTATION AS WELL.

AND VIA THESE REMOTE TERMINAL UNITS, WE EXIT THE DIFFERENT PIECES OF EQUIPMENT. WE ALSO HAVE INDIVIDUAL MANUAL CONTROLLERS AT THE FANS SO THAT THEY CAN BE OPERATED MANUALLY. WE HAVE HAD SIMILAR EXPERIENCE WITH WHAT JOHN STATED INSOFAR AS THE RELIABILITY OF OUR VENTILATION SYSTEM COMPONENTS AS WELL AS CENTRAL CONTROL BRINGING UP A VENTILATION SCENARIO THAT HAS BEEN REQUESTED INSOFAR AS AN EMERGENCY IS CONCERNED.

I THINK THE FIRST EXERCISE THAT WE RAN PRIOR TO THE OPENING OF THE EAST LINE TOOK SOMETHING ON THE ORDER OF 10 TO 15 MINUTES FOR THE CONSOLE OPERATOR IN CENTRAL TO BRING THE FANS UP AT THE PARTICULAR SITE THAT A SIMULATION WAS BEING HELD AT. AS A CONSEQUENCE, WE ADOPTED THE PROCEDURE OF HAVING AT LEAST ONE EMERGENCY VENTILATION SIMULATION PER WEEK. BY THAT I MEAN WE HAD ENGINEERS RIDING OUR TRAIN DURING PREREVENUE SERVICE ALONG WITH OPERATORS, AND WE WOULD AGREE BEFOREHAND WHAT TRACK AND WHAT SECTION OF LINE WE WOULD ASK FOR EMERGENCY VENTILATION. THIS CALL WOULD BE REFERRED TO CENTRAL FROM THE TRAIN INDICATING THE TRAIN IS STOPPING AT THIS POINT, THE TRAIN IS SMOKING, THERE IS A NEED FOR EMERGENCY VENTILATION. THIS IS THE PUSH-PULL SEQUENCE WE ARE ASKING FOR. WE WOULD LIKE THE DURATION, HOW LONG IT WOULD TAKE THEM TO RESPOND TO THIS CHALLENGE.

VIA THESE EXERCISES, THEY BECAME MORE PROFICIENT INSOFAR AS UNDERSTANDING THE OPERATION OF THE CONSOLE, BRINGING UP THAT PARTICULAR LINE SECTION ON THE CRT THAT IS LOCATED AT THE CONSOLE IN OPERATING THE VENTILATION SYSTEM PROPERLY.

WE ALSO HAD TROUBLES WITH RESPECT TO DAMPER OPERATION AND WITH RESPECT TO MOTORS. FROM MY POINT OF VIEW, VENTILATION SYSTEMS ARE RATHER COMPLICATED. AND I DON'T KNOW THAT IT HAS EVER BEEN MODELED FROM A RELIABILITY POINT OF VIEW WITH ESTIMATES BEING MADE INSOFAR AS WHAT ITS RELIABILITY WOULD BE. BUT I HAVE THOUGHT IN THE PAST THAT WOULD BE A RATHER CHALLENGING EXERCISE, TO MODEL THE VENTILATION SYSTEM AND TO PREDICT WHAT ITS MEANTIME FIGURE WOULD BE. CONTROLLING THE MULTITUDE OF FANS THAT THE SYSTEM POSSESSES, I THINK THAT THE DOWN TIME WOULD BE RATHER SHOCKING. TO PREDICT DOWN TIME WOULD BE --

MR. FARRELLY: MR. LOCK, DO YOU RECEIVE VERIFICATION BACK AT YOUR CENTRAL CONTROL THAT THE FANS ARE ACTUALLY IN OPERATION?

MR. LOCK: I DO NOT BELIEVE THAT WE DO. I THINK THAT WE VERIFIED THAT WE HAVE AIR FLOW INSOFAR AS THE DAMPERS ARE CONCERNED. BUT INSOFAR AS ACTUAL FAN OPERATION IS CONCERNED, I DO NOT THINK THAT WE SENSE ACTUAL FAN OPERATION.

WE HAVE A REQUIREMENT INSOFAR AS OUR FANS ARE CONCERNED THAT THEY OPERATE AT HIGH TEMPERATURE BECAUSE OF THE ENVIRONMENT AND EMERGENCY POSITIONS. AND SO I THINK IT IS A 300-DEGREE-FAHRENHEIT OPERATION FOR ONE HOUR THAT THE SYSTEM AND ITS COMPONENTS ARE RATED AT. AND FOR NORMAL VENTILATION, AS GEORGE WAS SAYING, WE DO USE MULTIPLES OF SMALL FANS AT THE END OF THE PLATFORMS FOR NORMAL VENTILATION. WE DO NOT HAVE MIDTUNNEL FANS UNLESS TUNNEL LENGTH EXTENDS APPROXIMATELY IN THE VICINITY OF 25 FEET. WE WILL NOT HAVE EMERGENCY FANS UNLESS TUNNEL LENGTH IS IN EXCESS OF 1200 FEET.

IF WE HAVE PORTALS OR STATION-TO-STATION SPACING THAT IS LESS THAN THAT DISTANCE, WE WILL NOT PROVIDE FOR EMERGENCY VENTILATION.

MR. MC FARLAND: AL, YOU SAID 1200 FOOT PORTAL TO PORTAL.

MR. LOCK: THAT IS OUR CRITERION THAT WE WILL PROVIDE EMERGENCY VENTILATION IF THE TUNNEL EXCEEDS 1200 FEET PORTAL TO PORTAL, OTHERWISE WE WILL NOT.

I WANT TO REMARK THAT, OF COURSE, OUR SYSTEM IS AT GRADES ELEVATED AND SUBWAY. AND THAT WE HAVE A NUMBER OF SUBWAY SECTIONS THAT ARE PORTAL TO PORTAL. THERE IS NO STATION IN THE TUNNEL, AND SO A NUMBER OF THOSE SECTIONS HAVE NO STAND PIPE EITHER. WE HAVE CRITERION INSOFAR AS PLACING STAND PIPE IN THE TUNNELS. AND SOME OF THE PORTALS ARE SO SHORT, LESS THAN 600 FEET, WHERE WE WILL NOT PLACE A STAND PIPE IN THE PORTAL. WE WILL NOT PROVIDE FOR NORMAL VENTILATION IN THE TUNNEL AT SHORT SECTIONS OF SUBWAY.

MR. MC FARLAND: WOULD YOU CALL IT AN UNDERPASS?

MR. LOCK: UNDERPASS, RIGHT.

MR. WEULE: WE HAVE SIMILAR DIVISIONS.

MR. THOMPSON: OUR PLACEMENT OF FANS IS CLOSELY RELATED TO PLACEMENT OF EMERGENCY EXITS. A SECTION OF THE TUNNEL THAT COMES TO MIND IS ONE THAT HAS TWO FAN SHAFTS BETWEEN STATIONS WITH A VENT SHAFT IN BETWEEN THE FAN SHAFT, AND ALL THREE OF THESE STRUCTURES, EMERGENCY EXITS ENCOUPLED WITH THEM, ARE HANSEN VENT SHAFT STRUCTURES.

MR. MC FARLAND: IF YOU HAVE A POSSIBLE EMERGENCY EGRESS, BEING LATERAL, WOULD THAT FAN SHAFT BE THERE?

MR. THOMPSON: PROBABLY NOT.

MR. FARRELLY: MAY I ASK A QUESTION OF THE OTHER TRANSIT OPERATOR?

IN ADDITION TO THE CENTRAL SUPERVISOR CONTROL OF VENTILATION FANS AND THE ABILITY TO CONTROL THE FANS LOCALLY, RIGHT AT THE FAN, DO ANY OF YOU HAVE PROVISIONS FOR CONTROL OF THE FAN, SUCH AS AT A FIRE EMERGENCY PANEL AT A PARTICULAR PASSENGER STATION?

MR. LOCK: LET ME RESPOND TO YOUR QUESTION, BECAUSE THAT MATTER WAS DEBATED QUITE EXTENSIVELY AT ONE TIME ON OUR SYSTEM. THERE WAS A PROPOSAL THAT WAS PUT FORTH, AND IT WAS CONSIDERED VERY SERIOUSLY TO HAVE A CONTROL CENTER AT EACH TRAIN CONTROL ROOM FOR THE FOUR FANS SUCH THAT IF CENTRAL WAS EVER SABOTAGED OR FOR ANY REASON OR ANOTHER IT BECAME INOPERABLE, WE WOULD STILL HAVE REMOTE VENTILATION CONTROL CAPABILITY IN ADDITION TO THE LOCAL CONTROLS. BECAUSE OF COST EFFECTIVENESS, LET ME SAY, THIS PROPOSAL WAS NOT ACCEPTED. IT WOULD BE A THIRD LEVEL OF OPERATIONAL CONTROL IF WE ALREADY AGREED TO, AND WE FELT THAT IT REALLY WAS NOT NECESSARY. BUT THE ADVOCATES OF THIS PROPOSAL WERE VERY SERIOUS WITH RESPECT TO PROVIDING FOR SYSTEM OPERATION WITHOUT A CENTRAL CONTROL FACILITY, SO TO SPEAK. AND THERE ARE A NUMBER OF PEOPLE AT MARTA TODAY WHO VERY SERIOUSLY WANT US TO CONSIDER DISMANTLING THE VENTILATION OPERATION, SO TO SPEAK, AS A COST-EFFECTIVE MEASURE.

MR. FARRELLY: MY QUESTION WAS ALSO PARTIALLY ADDRESSED TO THE ISSUE OF A FIRE MANAGEMENT PANEL AT PASSENGER STATIONS WHERE A COMMAND POST OR FIRE HEADQUARTER MIGHT BE SET UP IN AN

EVENT OF AN INCIDENT.

MR. LOCK: WHAT WE USED WAS THE FIRE MANAGEMENT CONCEPT INSOFAR AS EMERGENCIES ARE CONCERNED. BUT WE DO NOT PROVIDE FOR FAN CONTROL AT THAT PANEL. WE DO NOT PROVIDE, YOU KNOW, FOR COMMUNICATION CAPABILITY BETWEEN THAT FIRE MANAGEMENT PANEL WHICH BECOMES THE COMMAND POST VIA THE MAINTENANCE PHONE JACKS TO OTHER PARTS OF THE STATION AND THE ASSOCIATE LINE SECTIONS.

MR. FARRELLY: I SEE.

MR. REYES: WHEN WOULD THE LOCAL SYSTEM, THEN, BE UTILIZED AND BY WHOM?

MR. LOCK: THE LOCAL SYSTEMS ARE UTILIZED IN SEVERAL WAYS. ONE, THEY ARE UTILIZED BY MAINTENANCE IN THE EXERCISING AND THE PERFORMANCE OF ROUTINE MAINTENANCE ON THOSE FANS.

TWO, THEY HAVE BEEN UTILIZED IN SIMULATIONS BY MARTA PERSONNEL AND THE FIRE DEPARTMENT PERSONNEL ASSUMING THAT, YOU KNOW, CENTRAL CONTROL IS INOPERABLE. AND WE STILL HAVE, THEN, A CAPABILITY TO OPERATE THE FANS MANUALLY ON SITE.

MR. REYES: BUT THEY WOULD DO THAT ONLY AFTER THEY HAD COMMUNICATED WITH CENTRAL. IN OTHER WORDS, CENTRAL IS AWARE THAT THESE CHANGES ARE TAKING PLACE ON THE SITE, THAT THE WHOLE VENTILATION IS BEING ACTIVATED THERE?

MR. LOCK: THERE IS A COMMUNICATION NET WHERE ALL THREE PARTIES ARE IN VOICE CONTACT, YES.

MR. REYES: ASSUMING THAT THE VENTILATION THERE IS CHANGED ON SITE, IS THERE SOME WAY FOR THE COMMAND CENTER TO

KNOW WITHOUT YOUR LINE COMMUNICATION THAT SOMETHING TOOK PLACE? DOES THE CONTROL BOARD INDICATE THAT THERE HAS BEEN A CHANGE IN THE SYSTEM?

MR. LOCK: AT CENTRAL THE CRT, THE CONTROL BOARD, WILL IDENTIFY VIA THE REMOTE TERMINAL UNIT ON SITE, WHAT STATE THOSE PARTICULAR TERMINALS ARE IN, WHAT SIGNAL IS THAT LOCATION. IT WILL IDENTIFY THE SIGNAL LEVEL AT THAT LOCATION.

MR. REYES: CENTRAL CANNOT OVERRIDE THE SYSTEM ONCE IT ACTIVATES LOCALLY?

MR. LOCK: CENTRAL CAN STOP IT. CENTRAL CAN REVERSE IT.

MR. FARRELLY: THE CENTRAL CONTROL CAN OVERRIDE THE LOCAL CONTROL?

MR. LOCK: OH, YES.

MR. MC FARLAND: ONCE YOU SWITCH FROM REMOTE TO LOCAL, CENTRAL CAN PUT THAT BACK TO REMOTE AGAIN?

MR. LOCK: CENTRAL CAN OVERRIDE IT, YES.

MR. FARRELLY: DOES THIS PRESENT PROBLEMS FOR PEOPLE MAINTAINING THE EQUIPMENT IF THEY THROW THE FAN CONTROL TO THE LOCAL POSITION?

MR. LOCK: I BELIEVE THEY HAVE A LOCK-OUT CAPABILITY SIMILAR TO THE LOCK-OUT CAPABILITY THAT WE HAVE ON OUR ELECTRIFICATION SYSTEM WHERE YOU CAN LOCK OUT A BREAKER AND CENTRAL CONTROL AND THEN IRRESPECTIVE OF WHAT IT DOES, IT CANNOT FLIP THAT BREAKER.

MR. MC FARLAND: DO YOU HAVE A VERY CLEARLY DEFINED LOCK-OUT SYSTEM?

MR. LOCK: OH, YES, WE DO.

MR. FARRELLY: RUSS, THE REASON I ASKED AL LOCK THE

QUESTION, WAS THE PRESENT STATUS OF 130 CALLS FOR, IN ADDITION TO THE REMOTE SUPERVISING STATION REQUIREMENTS, REMOTE CONTROL TO BE LOCATED AT THE FIRE DEPARTMENT PANEL OF EACH STATION AT CLOSE PROXIMITY TO ABOVE-GROUND MAINTENANCE. SO THAT WOULD BE THE THIRD LEVEL OF CONTROL YOU ARE REFERRING TO. AND THAT IS WHAT IS PRESENTLY IN THIS STANDARD.

MR. MC FARLAND: THAT IS INTRIGUING.

MR. FARRELLY: AND IT WOULD APPEAR THAT NONE OF THE PROPERTIES HERE HAVE THAT CAPABILITY.

MR. MC FARLAND: MR. DONATO, YOU DON'T HAVE THAT IN MONTREAL?

MR. DONATO: WE CANNOT OPERATE THE FANS LOCALLY, BUT CENTRAL CAN OVERRIDE THAT. THE PEOPLE MAINTAIN A SYSTEM WHERE THEY CAN LOCK IT WITH A PADLOCK, CAN SWITCH IT OFF COMPLETELY TO SECURE IT IF THEY WORK ON IT. BUT NORMALLY, IF THEY WANT TO ACTIVATE A FAN, THEY WOULDN'T ACTIVATE LOCALLY. THERE IS A PHONE THERE. IF THEY DO ACTIVATE THE FANS, CENTRAL CONTROL WILL RECEIVE A MESSAGE.

MR. RHINE: I MENTIONED THE QUESTION MR. REYES IS ASKING ABOUT AN AUTOMATIC NOTIFICATION AT CENTRAL WHEN WHAT WILL HAPPEN IF SOMEBODY IN THE FIELD SWITCHES ANYTHING FROM REMOTE TO LOCAL. IF CENTRAL IS UNABLE TO CONTROL THE FANS FOR WHATEVER REASON -- A MAJOR CATASTROPHE -- THEY MAY VERY LIKELY NOT GET ANY AUTOMATIC FEEDBACK EITHER. THEY ARE GOING TO BE DEPENDENT ON VOICE COMMUNICATION TO BE ADVISED OF THE STATUS OF THINGS AT THE INCIDENT SCENE.

IT IS GOING TO BE VERY IMPORTANT THAT, IF ALL ELSE FAILS, WIRES OR DAMAGE OR DTS DAMAGED, CONTROLS AND DATA

FEEDBACK, THEN THE VOICE COMMUNICATION IS ONE THING THAT REMAINS TO KEEP CENTRAL ADVISED.

AND IT WOULD SEEM THAT, FROM THAT SCENARIO, THEY ARE ONLY ONLOOKERS ANYWAY, BUT THEY ARE STILL AN OVERALL OBSERVATION POINT. BUT IF YOU HAVE A VERY SERIOUS PROBLEM AT CENTRAL, YOU MAY NOT GET YOUR AUTOMATIC CENTRAL CHANGES IN THE VARIOUS CONTROLS IN THE REMOTE SIDE.

MR. THOMPSON: IN WMATA THE FANS CAN BE OPERATED FROM CENTRAL AUTOMATICALLY, BUT IF IT SWITCHES OVER TO MANUAL EMERGENCY OR IN ANOTHER CASE THERE IS AN OFF POSITION ALSO, THERE IS NO OVERRIDE CAPABILITY FROM DOWNTOWN AT ALL. I THINK ONE OF THE PROBLEMS THERE IS, THERE IS NOT AN EXCESS NUMBER OF CHANNELS AVAILABLE ON DTS TO GIVE THEM THAT CAPABILITY. I THINK THEY HAVE A LIMITED NUMBER OF CALLING BACK.

ANOTHER THING THAT MIGHT HEDGE UPON THIS IS, WHEN YOU GET IN THE AREA OF DESIGNING VENTILATION SYSTEMS, SOME THOUGHT SHOULD BE GIVEN TO DESIGNING A SYSTEM FOR USE THROUGHOUT THE ENTIRE PROJECT. WE HAVE NO LESS THAN SIX MAJOR MANUFACTURERS INVOLVED IN THE CONSTRUCTION AND THE PARTS PROCUREMENT FOR THE SYSTEMS WE HAVE AT WMATA. AND IT IS COMPLICATED FROM A TRAINING AND MAINTENANCE POINT OF VIEW. AND YOU HAVE TO BECOME FAMILIAR WITH ALL OF THEM.

MR. MC FARLAND: VERN GARRETT MENTIONED THAT YOU HAVE EVERY PUMP AND EVERY FAN MANUFACTURED IN THIS WORLD IN THAT SYSTEM.

MR. THOMPSON: I THINK WE ARE PROBABLY A TEST GROUND FOR A LOT OF THINGS, BUT IT CERTAINLY DOES CONTRIBUTE TO THE

PROBLEMS THAT WE HAVE HAD.

MR. MC FARLAND: HAS ANYONE USED SYSTEMWIDE PROCUREMENT IN FANS OR PUMPS? RALPH, DID BARTD LOOK INTO THAT?

MR. WEULE: I AM NOT SURE I CAN REALLY ANSWER THAT. I THINK SO, BUT I THINK AT LEAST THE RESULT HAS BEEN FAIRLY STANDARDIZED. HOW THAT WAS ACHIEVED, I AM NOT SURE. THEY WERE VERY ACTIVE IN A NUMBER OF SYSTEMWIDE THOUGHTS -- THE LINERS BEING ONE OF THE CLASSICS.

MR. LOCK: THE MARTA EXPERIENCE WAS THIS: FOR THE EAST LINE, FOR THE WEST LINE, AND FOR THE NORTH-SOUTH LINE, WHICH IS PHASE "A", WE HAD INDIVIDUAL COMMUNICATION CONTACT. WE HAD CT416, WHICH WAS THE SUPERVISOR IN A CONTROL SYSTEM THAT OPERATES IN THE AREA THAT WE ARE DISCUSSING. AND THEN WE HAD A CC2C, A CLOSE CIRCUIT CONTRACT, A RADIO COMMUNICATION CONTRACT. WE HAD TELEPHONE SYSTEM CONTRACTS.

FOR PHASE B, BECAUSE OF THE PROBLEMS THAT WE ENCOUNTERED, ESPECIALLY WITH RESPECT TO SCHEDULING CONTRACTORS ONE AFTER THE OTHER AND THE DELAYS THAT OCCURRED AND THE CLAIMS THAT CONTRACTORS WOULD MAKE BECAUSE THEY DID NOT HAVE ACCESS TO THE SITE BECAUSE ONE MAN WAS PULLING CABLE AND THE OTHER MAN WAS DOING THIS AND THEY COULD NOT GET TO THE JUNCTION BOX AND MAKE THEIR CONNECTIONS, WE USED A SYSTEMWIDE PROCUREMENT. WE COMBINED ALL OF THIS INTO ONE BIG PACKAGE. AND CQ440 HAD THE CONTRACTOR BE RESPONSIBLE FOR THIS HEADACHE.

BUT INSOFAR AS THE FANS THEMSELVES ARE CONCERNED AND THE PUMPS, NO, WE HAVE NOT CONTINUED TO PROCURE THOSE IN THE SAME MANNER THAT WE DID IN PHASE A SEPARATELY. THERE ARE NOT

THAT MANY OF THEM. THAT'S RIGHT.

MR. DONATO: YOU HAD SEPARATE CONTRACTS FOR FAN INSTALLATION, BUT THEY WERE LARGE ORDERS. AS FAR AS THE CONTROLS OF THESE FANS, IT WAS A SEPARATE CONTRACT. SO WE DEAL WITH TWO CONTRACTORS. IT TURNS OUT THAT THE FANS WERE READY FOR OPERATION AND THE TELE-CONTROL WAS READY ABOUT A YEAR AFTER.

MR. MC FARLAND: HAS ANYONE HAD ANY EXPERIENCE IN PROJECTWIDE PROCUREMENTS WITH REGARD TO WARRANTIES IN THAT IF YOU TAKE DELIVERY AND STORE EQUIPMENT, DO YOUR WARRANTIES RUN OUT WHILE THEY ARE IN STORAGE?

MR. THOMPSON: THAT IS GENERALLY WHAT HAS HAPPENED. USUALLY THE PRODUCTS WE BUY ARE OUT OF THE WARRANTY LONG BEFORE THEY GO INTO USE AND OPERATION.

MR. RHINE: BUT THE REASON FOR THAT IS NOT NECESSARILY BECAUSE YOU COULD NOT GET A WARRANTY TO COVER THAT, BUT IT IS BECAUSE YOUR CONSTRUCTION IS DELAYED.

MR. LOCK: THE WARRANTY QUESTION IS A VERY INTRIGUING ONE. WE HAVE A VARIETY OF EXPERIENCE INSOFAR AS WARRANTIES ARE CONCERNED. ULTIMATELY THE PURCHASER PAYS FOR THE WARRANTY. THERE IS NO QUESTION ABOUT THAT WHATSOEVER. ON OUR VEHICLE CONTRACT WE HAVE A THREE-YEAR WARRANTY ON THOSE VEHICLES OR 150,000 MILES, WHICHEVER COMES FIRST AFTER ACCEPTANCE. OUR EXPERIENCE HAS BEEN THAT VEHICLE ACCEPTANCE INITIALLY, EARLY IN TIME, WHEN WE WERE RATING OURSELVES TO OPEN THE FIRST PORTION OF OUR SYSTEM, OCCURRED VERY CLOSE TO REVENUE SERVICE. SO THERE WASN'T A PROBLEM WITH THE VEHICLE IN THIS REGARD. ITS WARRANTY BEGAN PRIOR TO ITS REVENUE

SERVICE USAGE.

ON STATION EQUIPMENT, HOWEVER, THIS IS A BIG CONCERN. NOW, AGAIN, IT IS A MATTER FOR YOU TO CONSIDER IN THE PREPARATION OF YOUR SPECIFICATION. OUR FARE CONNECTION EQUIPMENT, THE EQUIPMENT INTENDED FOR THE NORTH-SOUTH LINE, WHICH IS THE LAST PORTION OF PHASE A, A GOOD DEAL OF THAT EQUIPMENT HAD BEEN MANUFACTURED PREVIOUSLY IN CONJUNCTION WITH THE PRODUCTION LINE THAT WAS MADE FOR THE EAST-WEST LINE. THIS EQUIPMENT IN TURN WAS PLACED IN STORAGE BY THE MANUFACTURER. IT WAS NEVER DELIVERED. IT WAS NOT PLACED ON THE SITE. AS A CONSEQUENCE, OUR WARRANTIES ARE AFTER ACCEPTANCE. SO THE WARRANTIES COMMENCE AFTER THAT EQUIPMENT IS PUT IN SERVICE AND ACCEPTED.

THERE CAN BE A BIG PROBLEM WITH RESPECT TO ESCALATORS IN THIS REGARD. HOWEVER, WE HAVE MAINTENANCE CONTRACTS ON OUR ESCALATORS, SO WE DO NOT HAVE WARRANTY PROBLEMS IN THAT REGARD. WE HAVE MAINTENANCE WARRANTIES ON THE ESCALATORS AND ELEVATORS.

ANOTHER CONCERN OF OURS WITH RESPECT TO FIXATION EQUIPMENT IS PREMATURE INSTALLATION OF THIS EQUIPMENT PRIOR TO THE ACTUAL FINISHING OF THE STATION WHEREBY THE ACCUMULATION OF DUST AND GREASE AND DIRT AND DAMAGE THROUGH MISUSE OR HANDLING BY CONTRACTOR PERSONNEL WILL CAUSE PROBLEMS INSOFAR AS THIS EQUIPMENT IS CONCERNED. AND OUR EXPERIENCE ON THE EAST-WEST LINE HAS RESULTED IN US DELAYING OR DEFERRING THE INSTALLATION OF HANDSETS, CCTV CAMERAS, AND OUR FIXED EQUIPMENT IN OUR STATION UNTIL WE ARE PRACTICALLY -- THE DAY BEFORE WE ARE READY FOR REVENUE

SERVICE. WE ARE SCHEDULING THE NORTH-SOUTH LINE FOR DECEMBER 1. IN EVERY STATION PRACTICALLY IN THE NORTH-SOUTH LINE WE HAVE NOT INSTALLED CCTV. WE HAVE NOT YET INSTALLED OUR HANDSETS. WE ARE WAITING PRACTICALLY UNTIL THE LAST MINUTE.

MR. FARRELLY: WE HAVE HAD EXPERIENCE WITH PROCUREMENTS OF MATERIALS FROM THE MANUFACTURER, THE MATERIALS BEING PLACED INTO WAREHOUSES AWAITING INSTALLATION AND THE WARRANTIES START AT SOME POINT AFTER THE INSTALLATION, SOME SORT OF UPSET LIMIT PERHAPS SO THAT THE MANUFACTURER KNOWS AT LEAST HOW FAR INTO THE FUTURE HE IS LIABLE TO LEAVE UP TO THE WARRANTY. I DON'T SEE THE WARRANTY PROBLEM. YOU PAY FOR IT, AS AL LOCK SAID, ONE WAY OR ANOTHER. I WOULD ADVISE YOU TO HAVE IT.

MR. LOCK: MAY I MAKE ANOTHER COMMENT CONCERNING WARRANTIES? AND I THINK THIS IS RATHER PERTINENT. A WARRANTY PROVIDES YOU WITH A FORM OF INSURANCE POLICY, ESPECIALLY ON EQUIPMENT SUCH AS THE VEHICLE AND/OR TRAIN CONTROL EQUIPMENT, BECAUSE YOU INVARIABLY HAVE CONTRACTOR PERSONNEL ON SITE RESPONSIBLE FOR MAKING THAT EQUIPMENT. AS A NEW EMERGING TRANSIT PROPERTY, YOU HAVE A PROBLEM OF ACQUIRING MAINTENANCE PERSONNEL AND HAVING THEM TRAINED AND CAPABLE ON SITE TO PERFORM ALL OF THESE FUNCTIONS. HAVING A CONTRACTOR PERFORM IN THIS AREA, HAVING A RESPONSIBILITY VIA THE WARRANTY TO MAINTAIN THIS EQUIPMENT, GIVES YOU A GREAT DEAL -- PROVIDES A GREAT DEAL OF ASSISTANCE RATHER THAN HAVING YOU AT DAY ONE TAKE COMPLETE RESPONSIBILITY FOR THE OPERATION AND MAINTENANCE OF THE SYSTEM.

MR. MC FARLAND: ARE THERE OTHER ISSUES ON VENTILATION?

MR. DONATO: ONE COMMENT FOLLOWING WHAT AL HAS SAID. THIS MIGHT BE TRUE OF CAR EQUIPMENT. WE HAVE FOUND FOR EQUIPMENT GUARANTEE THE CONTRACTOR WILL DO THE MAINTENANCE ON THE EQUIPMENT FOR A YEAR OR TWO YEARS IS BEING USED BY MANY CONTRACTORS TO FINISH THEIR WORK. AND ACTUALLY YOU ARE IN OPERATION DURING THAT TIME PERIOD, AND THEY DON'T PROVIDE YOU SERVICE AT NIGHT. THEY DON'T GIVE YOU A SERVICE TO OPERATE A SUBWAY. CASES WE REFERRED TO TAKE OVER THE EQUIPMENT IMMEDIATELY ONCE IT IS COMPLETED WITHOUT ANY ONE-YEAR OR TWO-YEAR MAINTENANCE CONTRACT. WE WOULD RATHER TAKE IT IMMEDIATELY PROVIDING WE GET THE INFORMATION AHEAD OF TIME, WHICH IS DIFFICULT TO GET.

MR. MC FARLAND: THAT'S WITH A TRAINED MAINTENANCE AUTHORITY STAFF.

MR. DONATO: THAT'S RIGHT. WE FEEL THAT IF WE HAVE THE PROPER INFORMATION WE CAN TRAIN OUR PEOPLE AHEAD OF TIME. AND WHEN WE START TRAINING WE CAN MAINTAIN THE EQUIPMENT IMMEDIATELY. THEN WE PUT A MAN THAT WE NEED TO KEEP, FOR INSTANCE, THE ESCALATOR WORKING, AND WE DON'T WAIT FIVE HOURS FOR A SERVICEMAN. WE PUT THEM ON THE JOB, SO WE GET BETTER SERVICE THAN THE TRANSPORTATION PEOPLE.

MR. MC FARLAND: ARE THERE ANY OTHER AREAS OF VENTILATION, EMERGENCY VENTILATION, THAT ANYONE WOULD LIKE TO SPEAK ON?

MR. DONATO: I EXPLAINED YESTERDAY ABOUT OUR EMERGENCY PROCEDURE USING VENTILATION TO MASTER THE MOVEMENTS. I KNOW THAT MARTA IS DOING IT. HOW ABOUT MARTA? DO YOU HAVE A

STRATEGY OF HOW TO USE THE VENTILATOR IN CASE OF FIRE?

MR. THOMPSON: RIGHT NOW IT IS STILL UNDER DEVELOPMENT. IT HASN'T BEEN APPROVED YET. IT IS ONLY RECENTLY THAT IT COMES UNDER CLOSE SCRUTINY.

MR. MC FARLAND: CURRENTLY WMATA DOES NOT HAVE AN EMERGENCY VENTILATION PROCEDURE.

MR. THOMPSON: THAT IS CORRECT. WE OPERATE FANS BASED SOLELY ON THE JUDGMENT OF THE CENTRAL CONTROL STAFF. AND THEY ARE NOT REALLY TRAINED TO HANDLE THAT TYPE OF SITUATION, BECAUSE THEY ARE DOWNSTAIRS IN THE BASEMENT WATCHING THE CRT.

ONE OF THE MODIFICATIONS THAT IS GOING TO COME OUT OF THIS IS A PLACEMENT OF A TARGET ON THE CRT TO SHOW THEM WHERE THE FANS ARE.

MR. MC FARLAND: IS THERE MARKING IN THE TUNNEL TO GIVE THE OPERATOR THE TRAIN LOCATION?

MR. THOMPSON: YES. THERE ARE CHAIN MARKINGS IN THE TUNNEL. IT DEPENDS ON WHAT SECTION OF THE TUNNEL YOU ARE IN WHETHER THEY ARE EFFECTIVE OR NOT AND WHETHER THEY WILL BE ABLE TO SEE. WE HAVE THREE TYPES OF MARKERS. THE SMALLEST OF THESE MARKERS IS THREE BY SIX INCHES WHICH INDICATES MAYBE THIS BIG (INDICATING). THEN THERE ARE TWO OTHERS THAT ARE SIGNIFICANTLY LARGER AND THEY ARE A LOT MORE VISIBLE, BUT THEN AGAIN, ONE IS FLUSH AGAINST THE WALL. AND IN NEW SECTIONS AND ALL FURTHER WILL HAVE THEM PERPENDICULAR TO THE WALL. BUT ASIDE FROM THOSE, THERE AREN'T ANY MARKINGS TO IDENTIFY ANY OTHER TUNNEL FEATURES.

THERE IS A LOT OF LACK OF KNOWLEDGE ABOUT TRAIN

OPERATORS AS TO WHERE THEY ARE IN THE TUNNEL. IF YOU TELL THEM TO STOP AT A FAN SHAFT, THEY MAY OR MAY NOT KNOW WHERE YOU ARE SPEAKING OF, SO THEY ARE NOT REALLY FAMILIAR WITH THEIR ENVIRONMENT EITHER.

MR. LOCK: WE HAVE GRAPHICS THAT ARE AT CENTRAL CONTROL WHICH WERE PREPARED BECAUSE OF THIS MATTER, RESULTED AS A CONSEQUENCE OF THE LENGTHY TIME TO BRING THE VENTILATION FANS INTO OPERATION WHEN WE FIRST STARTED EXERCISING THIS SYSTEM AND CONDUCTING OUR SIMULATIONS. ON POST BOARD, THREE BY FOUR, APPROXIMATELY, WE HAVE GRAPHICS FOR EACH LINE SECTION WHICH IDENTIFIES THE FANS AND THE FAN SETTINGS FOR PUSH-PULL OR REVERSE FLOW FOR PULL-PUSH IN EACH SECTION. THESE WERE PLACED ON A WALL NEXT TO THE ELECTRIFICATION CONSOLE WHERE THE REMOTE CONTROL WAS PERFORMED. AND VIA THESE GRAPHICAL AIDS THEN WHEN WE CONDUCT OUR WEEKLY TESTS, THE OPERATORS WERE ABLE TO MORE RAPIDLY BRING THE SYSTEM INTO OPERATION.

WE DO NOT HAVE, YOU KNOW, FORMAL COMPUTER CONTROL AT THIS TIME WHERE WE WOULD PUNCH IN MAYBE THE LINE SECTIONS AND THE DIRECTION OF FLOW AND THEN WE WOULD HAVE ALL FUNCTIONS ACTIVATED INSOFAR AS THEIR DIRECTION IS CONCERNED AND THE PLATFORM FAN AS WELL AS THE MIDLINE TUNNEL FAN. OUR MECHANICAL ENGINEER, MORRIS, HAS ASKED FOR THIS AND IT IS UNDER CONSIDERATION. BUT WE HAVE A VERY SMALL SYSTEM. WE ONLY HAVE ON THE EAST LINE TWO SECTIONS OF SUBWAY WHERE THERE ARE MIDLINE TUNNEL FANS. FOR EXAMPLE, ON THE WEST LINE I THINK THERE IS ONLY ONE MIDLINE TUNNEL FAN. AND NOW THAT WE ARE BRINGING UP THE NORTH-SOUTH LINE, WHICH IS THE MAJOR UNDERGROUND TUNNEL PORTION OF OUR SYSTEM, WE WILL START TO

HAVE MORE AND MORE FAN CONTROLS THAT HAVE TO BE EXITED.

MR. THOMPSON: ONE THING ABOUT CENTRAL CONTROL STAFF IS THAT THERE ARE NO REGULAR DRILLS CONDUCTED ON THEIR PART IN THE OPERATION OF THE FAN EQUIPMENT. AND THERE FOR A PERIOD OF TIME THERE WAS AN ACTUAL LANGUAGE PROBLEM OF HOW TO IDENTIFY THE FAN SHAFT IN CALLING FOR ITS ACTIVATION. A TERM THAT MIGHT BE FAMILIAR TO OUR STAFF WHEN GIVEN TO THEM OVER THE PHONE OR THE RADIO WOULD BE COMPLETELY FOREIGN TO THEM, AND THEY WOULD HAVE TO SAY "WHAT STATIONS ARE YOU BETWEEN?" AND I WOULD SAY THAT PROBLEM HAS BEEN RESOLVED. AND WE ARE NOW SPEAKING IN A COMMON LANGUAGE, BUT THERE IS NO REGULAR EXERCISING OF THE FANS OR INSPECTION OF THE SYSTEMS. WE ARE STILL TRYING TO RECOVER FROM THE DAMAGE THAT HAS BEEN INCURRED.

MR. MC FARLAND: ANY OTHER VENTILATION COMMENTS? IF NOT, IT'S BEEN ABOUT AN HOUR AND A HALF, LET'S TAKE ABOUT A 15-MINUTE BREAK.

(RECESS.)

MR. MC FARLAND: WE WOULD LIKE TO DISCUSS A TOPIC VERY DEAR TO NFPA 130 -- "EMERGENCY EVACUATION REQUIREMENTS."

WE HAD A DISCUSSION YESTERDAY IN REGARD TO THE DIFFERENCES BETWEEN 101 AND 130 -- "THE DYNAMIC VERSUS STATIC PLATFORM LOADING AND EXIT REQUIREMENTS." I THINK IT IS A SUBJECT THAT WE WANT TO PURSUE, PARTICULARLY IN CONJUNCTION WITH OUR FIRE DEPARTMENT, AND TAKE A HARD LOOK AT THE 130 IN THE DYNAMIC REGARD AS OPPOSED TO THE STATIC, IF I UNDERSTAND. AND I WOULD LIKE VERY MUCH TO SEE YOUR EVALUATIONS. WE HAVE A PLATFORM LENGTH THAT IS DICTATED BY

CONCEPT SIZE, AND WE HAD A PLATFORM WIDTH THAT IS DICTATED BY PHYSICAL CONSTRAINTS, AS A RULE, A MINIMUM SIZE THAT IS DICTATED BY RESTRAINTS. IT WILL HAVE NO LESS THAN, SAY, EIGHT FEET. WE HAVE A WIDTH OF ESCALATOR STAIRS IN OUR LOWEST VOLUME STATION WHERE WE ARE GOING TO HAVE A PLATFORM THAT WOULD BE IN VOLUME OR IN AREA MUCH GREATER THAN PATRONAGE REQUIREMENTS. YET IN THE STATISTIC EVACUATION CRITERIA WE WOULD HAVE TO ASSUME THAT ENTIRE PLATFORM WAS LOADED, AND WE WOULD HAVE TO PROVIDE EVACUATION FOR IT. THE OPPOSITE LOGIC BEING THE DYNAMIC OF A TIME ELEMENT IN UNLOADING TRAINS AND MOVING PEOPLE OUT IN A GIVEN TIME WITH NO REFERENCE TO A POSSIBLE SQUARE-FOOT CAPACITY.

AM I CORRECT ON THAT, DOUG?

MR. LOW: THAT'S BASICALLY IT.

MR. MC FARLAND: WELL, THAT'S SOMETHING THAT WE WANT TO SET SOME COMMON GROUND WITH OUR FIRE DEPARTMENT HERE ON HOW WE SHOULD BE APPROVING THIS.

MR. LOW: AS WE POINTED OUT YESTERDAY, I DON'T BELIEVE THERE IS ANY TRANSIT PROPERTY THAT HAS FOLLOWED NFPA 101 REQUIREMENTS TO THE LETTER. THERE HAS ALWAYS BEEN ADJUSTMENTS THAT HAVE BEEN MADE TO ACCOMMODATE EXACTLY WHAT YOU ARE TALKING ABOUT IN TERMS OF ELICITING THAT KIND OF SITUATION RATHER THAN A COMPLETELY RIGID, STATISTIC ONE. SO THAT NFPA 101 HAS NOT BEEN FOLLOWED IN THOSE CASES AND THEY HAVE BEEN, IN FACT, FOLLOWING SOMETHING SIMILAR AS 130, IN FACT, NOT AS STRINGENT AS 130. IF YOU LOOK AT ALL THE OTHER PROPERTIES THERE EXISTING, IT IS NOT UP TO THE 130 IN MOST CASES.

I THINK MR. DONATO INDICATED THAT MONTREAL COULD

ACCOMMODATE THE 130.

MR. DONATO: IN MOST CASES, NOT IN ALL CASES.

MR. LOW: BUT YOU COULD MAKE THE NECESSARY CONVERSIONS IF REQUIRED?

MR. DONATO: IN MONTREAL, I TALKED YESTERDAY ABOUT HOW TO BOARD OUR STATIONS WHERE YOU HAD A CORRIDOR ABOUT 1200 FEET TO GET TO THE PLATFORM. THIS WOULD NOT CONFORM WITH 130; OF COURSE NOT. SO WHAT WE HAVE DONE THERE IS WE BUILT ANOTHER ACCESS RIGHT ON TOP OF THE STATION. AND WE HAVE CUT THE DISTANCE. SO WE HAVE TWO ACCESSES AT THE STATION, ONE THAT IS RIGHT ON TOP OF THE STATION. SO THIS STATION CONFORMS WITH THE 130. I THINK EVENTUALLY -- THE STATIONS THAT WE HAVE THAT DO NOT CONFORM. WE WILL TRY -- WHEN THE OCCASION COMES -- TO MODIFY THEM SO THAT THEY CONFORM WITH 130.

MR. LOW: IF I COULD FINISH UP WITH THE THOUGHT ON THIS: I WOULD HOPE THAT THE FIRE DEPARTMENT WOULD CONSIDER SOMETHING ALONG THE LINES OF 130 AS BEING THE DIRECTION TO GO FOR A TRANSIT SYSTEM, BECAUSE IN EFFECT IT HAS BEEN FOLLOWED BY THE INDUSTRY, AND IT IS REALLY WHAT ALL THE OTHER PROPERTIES ARE USING, IN EFFECT. PERHAPS WHAT I SAID, NOT QUITE AS STRINGENT, SOMETHING ALONG THOSE LINES.

MR. MC FARLAND: DO YOU WANT TO REACT TO THAT STATEMENT, MR. LOCK?

MR. LOCK: I WAS, AND I BASICALLY AM, A PROPONENT OF NFPA 130. THE EFFORTS WITH RESPECT TO PREPARING A STANDARD BEGAN WHILE THE MARTA SYSTEM WAS UNDER DESIGN AND DEVELOPMENT. AND SOME OF THE INDIVIDUALS ASSOCIATED WITH

WORKING OUT A STANDARD WERE INVOLVED WITH THE MARTA PROGRAM AS WELL. AND AS A CONSEQUENCE, A NUMBER OF FEATURES IN THE STANDARD WERE MODELED AFTER THE DESIGN REQUIREMENTS THAT WERE IMPOSED ON THE MARTA SYSTEM.

I THINK THAT, AS I REMARKED YESTERDAY, THAT NFPA 101 STRETCHES SEMANTICS SOMEWHAT WHEN IT IS APPLIED TO A RAPID TRANSIT SYSTEM, CONSIDERING STATIONS TO BE PLACED AND IMPOSING REQUIREMENTS ON THEIR DESIGN, ON THAT BASIS. OUR EXPERIENCE IN ATLANTA, HOWEVER, HAS BEEN THAT OUR STATE FIRE MARSHAL WAS VERY RELUCTANT TO ACCEPT SOMETHING IN LIEU OF WHAT WAS RECOGNIZED IN THE STATE OF GEORGIA AS LAW, AND THAT WAS THE 1967 EDITION OF NFPA 101. AND WE DID TRY AND WE TRIED VERY SERIOUSLY TO PREPARE A WHITE PAPER WHICH PROVIDED ALL OF OUR RATIONALE, PROVIDED A BACKGROUND TO THE DESIGN OF OUR SYSTEM HOPING THAT WE WOULD RECEIVE APPROVAL TO PROCEED IN A LIKE MANNER WITH SUBSEQUENT FASHION. WE WERE UNSUCCESSFUL. AND WE HAD TO PROCEED ON A STATION-BY-STATION BASIS INSOFAR AS DESIGN APPROVALS WERE CONCERNED FOR THE FIRE MARSHAL.

NFPA 130, YOU KNOW, HOWEVER, GOES FAR BEYOND STATION DESIGN. AND IT IS IN THAT AREA THAT I SUSPECT -- I DON'T HAVE ANY REAL FEELING, BUT IT IS IN THAT AREA THAT I SUSPECT THAT AT MOST TRANSIT SYSTEMS, EITHER OLD OR NEW, THIS COUNTRY WILL HAVE A GREAT DIFFICULTY IN COMPLYING WITH NFPA 130. BUT, NEVERTHELESS, IT IS FAR BETTER TO DESIGN IT ON A STANDARD THAN IT IS TO STRETCH A STANDARD AND SAY THAT IT IS APPLICABLE TO THIS FIELD OF ACTIVITY WHEN IT WAS REALLY NEVER INTENDED FOR USE IN THE DESIGN OF A TRANSIT SYSTEM. AND SO IT WAS ONE OF MARTA'S RECOMMENDATIONS AT THE TIME WE APPEARED

BEFORE THE NATIONAL TRANSPORTATION SAFETY BOARD THAT A STANDARD SUCH AS NFPA 130 BE PURSUED AND BE ADOPTED FOR TRANSIT INDUSTRY. IT IS FAR BETTER TO HAVE SOMETHING AND TO DESIGN TO IT THAN TO BE IN THE DARK, SO TO SPEAK, IN THIS AREA.

MR. MC FARLAND: MR. LUTKUS, THERE IS A PUC POSITION ON THIS . . .

MR. LUTKUS: NO. THERE IS NOT A PUC POSITION ON NFPA 130. ACTUALLY, I WOULD LIKE TO GET A COPY OF IT TO TAKE A LOOK AT IT. BUT THE POSITION OF THE PUC IN REGARDS TO STANDARDS, THE COMMISSION WOULD CONSIDER THAT THE STANDARDS ARE APPROPRIATE. WHAT WE ARE TALKING ABOUT IS THE PERFORMANCE STANDARD. AND, IN FACT, THE COMMISSION AT THIS TIME IS INVOLVED IN A FEASIBILITY ASSESSMENT FOR DEVELOPMENT OF RAIL RAPID SAFETY STANDARDS FOR THE STATE OF CALIFORNIA. AND A FEASIBILITY PROJECT IS TO BE COMPLETED BY THE END OF MARCH. AND ALL THAT WILL DO AT THAT TIME WILL MAKE AN ASSESSMENT AS TO WEATHER IT IS FEASIBLE TO HAVE STANDARDS AND WHAT AREAS SHOULD THERE BE STANDARDS OR GUIDELINES OR RULES AND ALSO TO ASSESS WHAT IT WILL TAKE COMPLETELY, TIMEWISE, AND WHAT CATEGORIES. AND THAT WILL BE A SECONDARY PHASE.

MR. FARRELLY: I RECALL THERE WAS A PIECE OF CORRESPONDENCE BETWEEN THE PUC AND THE NFPA. I AM NOT SURE WHETHER IT WAS ADDRESSED -- BUT IT WAS TRANSMITTING SOME COMMENTS, AT LEAST, EXPLORING AREAS FOR FURTHER DISCUSSION AND POSSIBLE CHANGES OF 130 WHICH WAS RECEIVED EARLIER THIS YEAR. I AM NOT SUGGESTING THAT THAT ESTABLISHED A POSITION FOR THE PUC, BUT IT APPEARED THAT SOMEONE WITHIN THE PUC HAS

REVIEWED THESE DRAFTS. COULD YOU CLARIFY THAT?

MR. LUTKUS: THERE WAS A DRAFT, AND I THINK IT WAS OF CHAPTER TWO ONLY OF THE NFPA 130 STANDARD. AND OUR STAFF REVIEWED THAT, AND IT WAS THE STAFF'S OPINION THAT THAT DRAFT -- THE MATERIAL IN THERE -- WAS SO GENERALIZED THAT IT WAS THE STAFF'S OPINION THAT IT COULD NOT BE CONSIDERED AS A STANDARD. I WOULD LIKE TO SEE WHAT THE PRESENT STATE OF NFPA 130 IS. THERE MAY BE SOME CHANGES.

MR. MC FARLAND: DID THEY HAVE ALTERNATIVE CRITERIA TO SET UP AS A STANDARD, OR WAS IT THEY JUST FELT THAT THE 130 WAS NOT SUFFICIENTLY DETAILED?

MR. LUTKUS: THERE WAS NO ALTERNATIVE MATERIAL TO COMPARE. IT WAS JUST THAT THE MATERIAL CONTAINED IN THIS PARTICULAR CHAPTER WAS CONSIDERED TO BE SO GENERALIZED AND --

MR. MC FARLAND: SITE SPECIFIC?

MR. LUTKUS: TERMINOLOGIES AS SUCH MAY BE REQUIRED OR AS APPROPRIATE -- ITEMS LIKE THAT WHICH -- SPECIFICALLY, LIKE, QUOTE, "AS APPROPRIATE." THAT IS NOT TERMINOLOGY THAT IS APPROPRIATE FOR A STANDARD. THAT TYPE OF THING IS TOO GENERALIZED.

MR. MC FARLAND: I WAS STRUCK BY THE DIFFICULTY OF THE ABSENCE OF ANY COMMENTS IN REGARD TO TUNNEL EVACUATION WHICH IS MUCH MORE A CONCERN TO ME THAN STATION EVACUATION. BUT IN LOOKING AT OUR SYSTEM AND THE FACT THAT ALL OF OUR RUNNING TUNNELS OR A GREAT MAJORITY OF OUR RUNNING TUNNELS WILL BE BORED AND WILL PROBABLY BE SINGLE-TRACK DOUBLE BORE, I HAVE A GREAT NUMBER OF QUESTIONS WITH REGARD TO EMERGENCY EGRESS, TO EMERGENCY VENTILATION. AND IN LOOKING AT 130, I WAS STRUCK

BY THE COMMENTS THAT EMERGENCY EGRESS COULD BE VERTICAL OR LATERAL INTO THE PARALLEL BORE. IN OUR CASE, THE LATERAL END OF THE PARALLEL BORE WOULD GIVE US A DEGREE OF FLEXIBILITY AND WOULD ALSO GIVE US A DEGREE OF OPERATIONAL CONTRAINT.

IT WAS RAISED YESTERDAY THAT THE THIRD RAIL IN THE PARELLEL BORE IS GOING TO BE HOT. YOU HAVE A TRAIN THAT YOU ARE EXITING THROUGH PARALLEL CONNECTIONS. YOU MAY HAVE UP TO EIGHT HUNDRED TO A THOUSAND PEOPLE GOING INTO THE PARALLEL BORE. YOU HAVE MERELY A CATWALK WITH A COVER BOARDED THIRD RAIL. IMMEDIATELY I CAN CONJURE UP SOME SITUATION. BUT THIS IS THE SITUATION THAT IS USED IN ATLANTA.

MR. RHINE: THE THIRD RAIL IS OUT-BOARDED CATWALK.

MR. MC FARLAND: IT IS STILL THERE.

MR. RHINE: YOU ARE PROBABLY IN MORE DANGER BEING DOWN ON THE TRACK WITH THE INCOMING TRAIN COMING ACROSS TO RESCUE YOU THAN YOU ARE WALKING ACROSS TO THE THIRD RAIL.

MR. MC FARLAND: WITH A THOUSAND PEOPLE, THERE IS A LAW THAT WILL BE BROUGHT INTO APPLICATION IMMEDIATELY CALLED PARKINSON'S. YOU PUT A NUMBER ON IT.

MR. LOCK, DO YOU HAVE ANY CONCERNS? WAS THAT A CONCERN IN YOUR DELIBERATION WITH REGARD TO EMERGENCY EGRESS?

MR. LOCK: IT WAS A CONCERN. TECHNICALLY, WE CALL OUR DUCT BANK A SERVICE WALKWAY. PERSONALLY, WE FEEL IT IS A MEANS OF EMERGENCY EGRESS IN REFERENCE TO THE INVERT. THE DESIGN OF OUR CARS, BECAUSE WE HAVE AN END DOOR, WE HAVE ACCESS TO THE INVERT AS WELL AS TO THE SERVICE WALKWAY. SO WE CAN CONDUCT AN EVACUATION VIA BOTH LANES.

AGAIN, BECAUSE OF TRAIN CONTROL EQUIPMENT

IN PEDANT SPOTS, BECAUSE OF THE THIRD RAIL -- ALTHOUGH IT DOES HAVE A COVER BOARD -- AND YOU REALLY HAVE TO LOOK FOR TROUBLE WHEN YOU HAVE A COVER BOARD -- WHEN IT EXTENDS APPROXIMATELY 300 FEET, IT ONLY GIVES YOU ABOUT 60 DEGREES ACCESS TO THE THIRD RAIL. FROM MY POINT OF VIEW, YOU HAVE TO LOOK FOR TROUBLE. AND WITH PARKINSON'S LAW, SOMEONE WILL FIND TROUBLE.

ALSO, BECAUSE OF THE FACT THAT IN OUR TUNNELS WE HAVE A SLAB CONSTRUCTION INSOFAR AS VIBRATION AND NOISE IS CONCERNED, IT IS DIFFICULT TO CONSIDER THAT THE INVERT WOULD BE THE PREFERRED MEANS OF EGRESS. IT IS AVAILABLE, BUT THE SERVICE WALKWAY IS FAR MORE PREFERABLE. WE HAVE A HANDRAIL ON A SERVICE WALKWAY WHERE WE HAVE MIDTUNNEL EMERGENCY EXITS. WE PROVIDE FOR CROSSWALKS OVER THE RUNNING RAIL. WE PROVIDE FOR BREAKS IN THE THIRD RAIL. AND SO WE HAVE A DEFINED LANE OF EMERGENCY EVACUATION TO THE EMERGENCY EXIT AND THEN UP AND OUT OF THE SYSTEM. I THINK THAT IS PREFERABLE TO THE INVERT. AND THE FACT OF THE MATTER IS THAT ALTHOUGH WE DO HAVE EMERGENCY LIGHTING AND ALTHOUGH WE DO HAVE BATTERY SUPPLIES IN STATIONS, TO PROVIDE EMERGENCY LIGHTING IN THE SUBWAY AS IN THE STATION, AS WELL AS EXITING SIGNS, IT WAS SIMPLER TO CONDUCT THE EVACUATION ALONG THE SERVICE WALKWAY. AND THAT IS WHAT WE DO DURING OUR SIMULATIONS. WE HAVE NOT ENCOUNTERED ANY PROBLEMS IN OUR SIMULATIONS INSOFAR AS EVACUATIONS ARE CONCERNED.

BUT, AGAIN, LET ME SAY THIS, THAT A SIMULATION, A TEST, IS ONLY GOOD AS IT IS DESIGNED. AND TO MY KNOWLEDGE, WE HAVE NEVER BEEN ABLE TO HAVE A CRUSH LOAD ON EIGHT CARS AND

TO EVACUATE A CRUSH LOAD TRAIN. OUR SIMULATIONS ARE NORMALLY CONDUCTED WITH FOUR CARS. WE HAVE CONDUCTED THEM WITH TWO AND, AGAIN, IT IS A TEST AND EVERYONE KNOWS IT IS A TEST. SO TO EVACUATE 400 OR 600 PEOPLE IN A SIMULATION IS ONE THING, AND TO BE FACED WITH A PEAK 15-MINUTE EIGHT-TRACK CRUSH LOAD OF UPWARDS OF 1500 PEOPLE IS SOMETHING ELSE AGAIN.

MR. RICHARDS: OF COURSE, WE KNOW YOU HAVE YOUR SIMULATIONS AND YOU HAVE HAD FIRE DRILLS WHERE PEOPLE WERE INVOLVED IN CHECKING OUT YOUR SIMULATION.

MR. LOCK: DO YOU MEAN USING PATRONS?

MR. RICHARDS: DID YOU HAVE FIRE DRILLS WHERE PEOPLE WERE USED TO CHECK YOUR VALIDITY OF YOUR SIMULATION?

MR. LOCK: OUR SIMULATION INVOLVES VOLUNTEERS WHO ARE RIDERS ON A TRAIN AND WHO DO NOT KNOW IF AND WHERE THE EMERGENCY EVACUATIONS WILL TAKE PLACE. SO THEY ARE THE GUINEA PIGS, SO TO SPEAK, IN THE EMERGENCY EVACUATION EXERCISES. WE USE EMPLOYEES. WE HAVE NOT CONDUCTED AN EXERCISE DURING REVENUE SERVICE WHERE WE SIMULATE AN EMERGENCY AND ASK THE PATRONS TO EVACUATE INTO THE TUNNEL.

MR. RICHARDS: YOU NEVER REALLY HAD A FIRE DRILL, THEN?

MR. LOCK: IT IS A MATTER OF SEMANTICS. WE HAVE HAD A FIRE DRILL USING OUR EMPLOYEES. WE DO NOT HAVE FIRE DRILLS USING PASSENGERS. THAT WOULD BE MY RESPONSE TO YOUR QUESTION.

MR. MC FARLAND: WHAT IS THE HEIGHT OF YOUR CATWALK?

MR. LOCK: OUR CATWALK IS APPROXIMATELY 31 INCHES ABOVE THE TOP OF THE RAIL, OUR SERVICE WALKWAY. THAT IS THE TOP OF THE DUCT BANK.

MR. MC FARLAND: YOUR PLATFORM HEIGHT IS WHAT, 42 INCHES?

MR. LOCK: 44 INCHES.

MR. MC FARLAND: SO YOU ARE LESS. THE REASON THAT I RAISED THIS AT THE OBSERVATIONS PEER BOARD APPROXIMATELY A YEAR AGO IS, A VERY INTERESTING POINT WAS BROUGHT UP BY BOB JOHNSON FROM PATHCO THAT IT IS HIS FEELING THAT ANY SITUATION WHERE THERE IS AN EMERGENCY IN THE TUNNEL, THE OPERATOR HAS A SERIES OF INSTRUCTIONS TO FOLLOW. ONE IS TO RADIO HIS POSITION. TWO IS TO DO A WALK-AROUND, IF AT ALL POSSIBLE, AND THEN TO GET BACK TO CENTRAL.

WE POINTED OUT THAT IN MOST TUNNELS TO WALK AROUND IS TOTALLY IMPOSSIBLE. AND THEN HE MENTIONED THAT IN MONTREAL THE CATWALK IS NOT 42 INCHES HIGH. IT IS DOWN ABOUT 24 INCHES, WHICH WOULD GIVE YOU VISUAL ACCESS TO THE UNDERSIDE OF THE CAR. IT WOULD STILL GIVE YOU A WALKWAY. SOMEONE IN THE ORDER OF MY HEIGHT CAN'T WALK ON CATWALKS IN UMATA. HAD THOSE CATWALKS BEEN LOWER, THEY WOULD BE QUITE EASILY WALKED ON.

AND I WAS POINTED OUT BY JOHNSON THAT WALK-AROUND IS IMPORTANT. THAT PERHAPS WE SHOULD BE LOOKING AT A CATWALK AT APPROXIMATELY HALF THE PLATFORM HEIGHT, GETTING THE EMERGENCY EGRESS ON THE CATWALK THAT IS MORE USABLE, PARTICULARLY WITH A HANDRAIL, WHICH IS ALSO NOT COMMON, AND GIVE THE OPERATOR ACCESS TO THE UNDERCARRIAGE IF HE CAN CONDUCT A WALK-AROUND.

MR. LOCK: THE DESIGN OF THE TUNNEL INSOFAR AS THE SERVICE WALKWAY IS CONCERNED, FROM MY POINT OF VIEW, BASICALLY IS A MATTER OF CONVENIENCE. THE PRIMARY PURPOSE ORIGINALLY OF THAT SERVICE WALKWAY WAS THE DUCT BANK, TO ENCAPSULATE OUR

CABLING RATHER THAN STRINGING IT IN THE TUNNEL AND EXPOSING IT IN A TUNNEL. AND THE TOP OF THE DUCT BANK SERVES VERY CONVENIENTLY AS A SERVICE WALKWAY.

NOW, MOST OF OUR SYSTEM, INSOFAR AS THE SUBWAY TUNNELS ARE CONCERNED, IS COVERED CONSTRUCTION WHERE YOU HAVE A BOX, A RECTANGLE. AND AS A CONSEQUENCE, YOUR HEADROOM, WHEN YOU ARE ON THE SERVICE WALKWAY, IS NO PROBLEM WHATSOEVER. THE PROBLEM OCCURS WITH RESPECT TO LIGHT FIXTURES, WHERE THEY ARE LOCATED, IF THEY ARE LOCATED ON THE SIDE. AND THAT WAS A MATTER OF MUCH DISCUSSION, WHETHER WE WOULD HAVE OVERHEAD LIGHT FIXTURES OR WHETHER WE WOULD HAVE SIDE LIGHT FIXTURES. AND, BASICALLY, MAINTENANCE WAS A STRONG ADVOCATE OF PLACING LIGHT FIXTURES ON THE SIDE WALL BECAUSE IT WOULD BE VERY DIFFICULT AND A TIME CONSUMING CHORE TO REMOVE HANGING LAMP FIXTURES THAT WERE HUNG IN THE CENTER OF THE TUNNEL. MAINTENANCE WAS ALSO AN ADVOCATE IN HAVING LIGHT FIXTURES ACCESSIBLE FROM THE SERVICE WALKWAY RATHER THAN HAVING TO HAVE A LADDER WITH RESPECT TO ACCESSING LIGHT FIXTURES. YOU GET INTO THESE OPERATIONAL AND MAINTENANCE DISCUSSIONS WITH RESPECT TO DESIGN OF SYSTEM AND LIGHT FIXTURES. AND STANDPIPE DROPS ARE MORE OF A CONCERN INSOFAR AS THE SERVICE WALKWAY USE THAN ANYTHING ELSE.

NOW, BECAUSE OF THIS QUESTION THAT YOU RAISED WITH RESPECT TO BEING ABLE TO WALK AROUND A TRAIN, IN OUR SUBWAY STATIONS, NOW, AT THE END OF THE PLATFORM, WE HAVE APPROXIMATELY 150 FEET WHERE WE DO NOT HAVE THE SERVICE WALKWAY SO THAT WE ARE AT THE END OF THE INVERT LEVEL AND WE CAN INSPECT A MARIPARE (SIC) AND WALK AROUND A MARIPARE AT THAT

POINT. BUT WITH THE SERVICE WALKWAY, THERE IS REALLY NO MEANS OF BEING ABLE TO INSPECT THE UNDER-CAR EQUIPMENT BOXES.

MR. FARRELLY: MR. WEULE?

MR. WEULE: I WOULD SUGGEST THAT YOUR OPERATING CRITERIA AND PHILOSOPHIES WILL DICTATE YOUR DESIGNS IN THE AREA. AND THIS IS WHAT HAS TO BE ESTABLISHED FIRST. FOR INSTANCE, WHAT GEORGE DESCRIBES IS BASED IN A LARGE PART IN THE FACT THAT THEY HAVE TWO OR A CREW OF TWO ON THE TRAIN. ONE TAKES CARE OF THE PASSENGERS WHILE ONE WORKS ON THE FIRE. IN THE CASE OF THE BART TRAIN, WE HAVE ONE TRAIN OPERATOR. HE IS NOT CONCERNED WITH FIGHTING THE FIRE AT ALL. HIS PRIMARY ROLE IS TO GET THE PATRONS OUT AND CLEAR IT FOR THE FIRE DEPARTMENT TO COME IN AND TAKE CARE OF THE FIRE.

TO SUPPORT THE TWO-MAN CREW AND THE FIRE FIGHTING CAPABILITY, HE HAS STANDPIPES AND HOSES AND NOZZELS LOCATED THROUGHOUT. AND ONE DICTATES THE OTHER. AND I WOULD SUGGEST A SET PHILOSOPHY THAT DICTATES THE DESIGN.

MR. DONATO: I WOULD LIKE TO BRING A CORRECTION ON THAT, RALPH. ACTUALLY, WE WANT TO GO TO A ONE-MAN OPERATION. AND THE REASON WHY WE DIDN'T DO THE ONE-MAN OPERATION YET IS BECAUSE OF A LABOR PROBLEM. ACTUALLY, THE SYSTEM WAS DESIGNED SO THAT WE WOULD GO EVENTUALLY TO A ONE-MAN OPERATION.

MR. WEULE: SO YOU WILL BE PLACED WITH DEALING WITH THE PASSENGERS' PROTECTION AND MOVEMENT VERSUS THE --

MR. DONATO: WE WILL HAVE TO CHANGE OUR PROCEDURE, THEN, WHEREVER WE GO TO A ONE-MAN OPERATION. WE ARE THINKING ABOUT THAT NOW. BUT THE WALKWAY ARRANGEMENT WAS DESIGNED AT THE

TIME WITH A COMPROMISE, THE HEIGHT, THE WIDTH. THERE WAS A COMPROMISE. WE WANTED TO HAVE IT LOW ENOUGH SO THAT WE COULD HAVE ACCESS TO THE UNDERCARRIAGE. WE WANTED TO HAVE IT LOW ENOUGH SO THAT WE COULD STEP FROM THE INVERT TO THE -- WE HAVE INSTALLED HANDRAILS SO THAT WE CAN GRAB AT THE PROPER HEIGHT. WE WANTED TO HAVE IT HIGH ENOUGH FOR PEOPLE TO WALK FROM THE CAR DOWN ON THIS. WE WANTED IT WIDE ENOUGH SO THAT PEOPLE WOULDN'T FALL. BUT THEN IT WAS A TRADE-OFF WITH THE WIDTH OF THE TUNNEL, BECAUSE IN OUR CASE, IF WE INCREASED THE TUNNEL BY ONE INCH, SO I AM TOLD, THE COST OF THE EXCAVATION IS MUCH HIGHER BECAUSE EVERYTHING IS ROCK IN MONTREAL. WE NEED A CERTAIN AMOUNT OF STEEL ARCHES. IF WE WERE TO GO A LITTLE WIDER THAN THAT, WE MIGHT NEED A LOT MORE STEEL ARCHES. AND IT MIGHT DOUBLE THE COST OF TUNNELING. THERE IS AN AMOUNT OF TRADE-OFF THAT YOU HAVE TO TAKE INTO CONSIDERATION.

MR. MC FARLAND: MY CURIOSITY IS THAT, IN TALKING TO MANY SYSTEMS THAT HAVE WALKWAYS AND BORED TUNNELS, AS FAR AS I COULD ASCERTAIN, IT WAS A MATTER OF TRADITION, NOT FORETHOUGHT, THE SIZES AND WIDTH OF WALKWAYS.

WALTER DOCTORY (SIC) THAT WORKED FOR MCITA FOR 20-SOME YEARS -- HOW MANY DUCTS DOES T.A. HAVE IN THEIR DUCT BANK? SOME VERY LARGE NUMBER. AND HE HAS NEVER SEEN MORE THAN A SMALL PERCENTAGE OF THEM OCCUPIED. AND THAT'S A HUNDRED-YEAR SYSTEM.

MR. WEULE: I WOULD DOUBT VERY MUCH THAT EVACUATION CAPABILITY WAS THE PRIME REQUISITE IN THE WALKWAYS IN THE BART SYSTEM. I AM SURE IT WAS THE MAINTENANCE.

MR. DONATO: WHEN WE TALKED ABOUT THE EVACUATION, THE

WALKWAY IS NOT THE PROPER WAY TO EVACUATE PEOPLE, BECAUSE IT IS TOO LONG. OF COURSE, WE HAVE A TUNNEL WITH DOUBLE TRACK. WHEN WE EVACUATE, TIME IS IMPORTANT. AND WE EVACUATE PEOPLE ON THE INVERT. THE INVERT IS DESIGNED SO IT IS AS CLEAR AS POSSIBLE. IT IS TRUE WE HAVE SOME IMPOTENT SPOTS, BUT THE TUNNEL IS WELL LIT. AND WE CAN EVACUATE PEOPLE VERY, VERY FAST. AND WHAT WE DO IS WE KILL THE POWER ON BOTH TRACKS. AND IT IS NOT VERY OFTEN THAT WE HAVE TO EVACUATE PEOPLE. IT IS VERY SELDOM. AND YOU CAN SHUT DOWN YOUR SYSTEM AT THAT TIME. IF YOU REALLY HAVE A SERIOUS INCIDENT, YOU COULD SHUT IT DOWN FOR TWO OR THREE HOURS. WHAT WE DO IS WE PUT BUSES ON SURFACE FOR THAT TIME.

MR. MC FARLAND: YOU COULD HAVE SIDE-TO-SIDE EVACUATION. YOU COULD PULL A TRAIN UP. DO YOU DO THAT?

MR. DONATO: WE DON'T DO THAT. WE DON'T HAVE THAT BECAUSE WE HAVE THE TRACK SIDE BY SIDE. AND ONCE YOU START EVACUATION, YOU ARE LIABLE TO HAVE PEOPLE ON THE TRACK. AND IF YOU HAVE PEOPLE ON THE TRACK, YOU ARE NOT ALLOWED TO PUT POWER ON. YOU COULD KILL PEOPLE VERY EASILY. ONCE THE OPERATOR KNOWS THAT ONE PASSENGER GOT DOWN ON THE TRACK, HE HAS TO ASK FOR US TO CUT THE POWER. THERE IS NO POWER ON THE TRACK.

MR. GRAINGER: YOU HAVE TWO THIRD RAILS; DON'T YOU? THEY HAVE A SPECIAL PROBLEM BECAUSE THEY HAVE FOURE THIRD RAILS.

MR. SANDBERG: AS YOU HAVE RELATIVELY POINTED OUT, YOU HAVE SHORT STATION SPACING.

MR. DONATO: THE WALKING DISTANCE IS NOT VERY LONG.

MR. LOW: GEORGE, HOW DO YOU TURN OFF YOUR THIRD RAIL POWER? FROM WHAT SOURCES CAN YOU DEACTIVATE?

MR. DONATO: YOU HAVE TRIP SWITCHES ALONG THE TUNNEL EVERY ABOUT 400 FEET THAT YOU COULD USE. THE OPERATOR USUALLY DOESN'T USE THAT. HE USES HIS PHONE AND ASKS THE CENTRAL CONTROL TO CUT THE POWER. AND THEY CUT POWER IMMEDIATELY.

MR. LOW: DO YOU ALSO HAVE THEM IN THE STATION?

MR. DONATO: YES. YOU HAVE THEM AT ALL THE STATIONS, AT TEN OF THE STATIONS. AND IN THE CENTER STATION YOU HAVE TRIP SWITCHES.

MR. MC FARLAND: DO YOU HAVE ANY PROBLEM WITH VANDALS OR TRIPPING --

MR. DONATO: IN THE STATIONS, WE PUT THE GLASS TUBE SO THAT PEOPLE TRIPPING THIS WILL BREAK THE TUBE. BUT ELSEWHERE WE DON'T HAVE ANY OF THESE GLASS TUBES. THERE IS A CERTAIN AMOUNT OF PEOPLE WHO MIGHT USE THEM, BUT VERY, VERY SMALL. IT IS NO PROBLEM AS FAR AS WE ARE CONCERNED.

MR. WEULE: BART HAS ESSENTIALLY THE SAME SETUP WITH SUBWAY TRIPS IN THE SUBWAY AND PLATFORM TRIPS. THERE WAS A GREAT DEAL OF CONCERN IN PREREVENUE THAT THERE WOULD BE A VANDAL PROBLEM. IT HAS NOT TURNED OUT TO BE THE CASE.

MR. DONATO: ONE THING WE HAVE IS THE MEANS AT CENTRAL CONTROL TO OVERRIDE ALL OF THESE TRIPS IF WE WANTED TO. BUT THEY ARE UNDER ORDER NOT TO USE IT EXCEPT IN VERY SPECIAL CASES.

MR. WEULE: OURS HAVE TO BE RESET. THE GLASS ACTUALLY HOLDS THE BUTTON, THAT TYPE OF THING.

MR. DONATO: ONE THING WHICH IS NOT DIRECTLY ON THIS LINE BUT RELATES TO THAT, TO EVACUATION, IS WHEN YOU HAVE THE PROBLEM SOMEWHERE, THE DANGER IS THAT THE TRAINS WOULD BUNCH TOGETHER.

ONE PROVISION THAT WE HAVE AND OTHER SUBWAYS HAVE IS WHAT WAS CALL A DEPARTURE ORDER. AND EVERY STATION HAS A SIGN AND CENTER CONTROL PUSHES A BUTTON AND IT STOPS ALL THE TRAINS AT THE STATION. IT IS AN INDICATION TO ALL THE OPERATORS NOT TO MOVE OUT OF THAT STATION WHERE THEY ARE. AND WHEN THEY GET IN THE STATION, THEY STAY THERE AND WAIT FOR HIS ORDER TO PROCEED. SO WE DON'T BUNCH THE TRAIN TOGETHER.

MR. WEULE: WE HAVE ESSENTIALLY THE SAME TYPE OF AN OPERATION WHERE CENTRAL CONTROL ISSUES A PLATFORM HOLD WHICH WOULD HOLD AUTOMATICALLY THE TRAINS AT ALL THE STATIONS IN ADDITION TO TRAINS THAT ARE IN BETWEEN STATIONS INPLEMENTED THROUGH THE TRAIN CONTROL SYSTEM, THE VENT SEPARATION CONCEPT THAT I DESCRIBED YESTERDAY.

MR. MC FARLAND: TO STOP A VENT?

MR. WEULE: YOU CAN'T GET TWO TRAINS BETWEEN VENTS, SO THAT GIVES US AN ALARMING SITUATION. IF WE HAVE A FIRE, THE FIRST ACTION IS, YOU GET ALL THE REST OF THE TRAINS OUT OF THERE.

WE DO NOT DISCOURAGE PASSENGERS ONCE THEY ARE IN THE NON-INCIDENT BORE, CLEAR BORE, FROM GETTING ONTO THE TRACKWAY ITSELF. WE MAKE IT VERY VISIBLE TO THEM THAT THE THIRD RAIL IS HOT AND WILL REMAIN HOT. AND THAT IS PUBLISHED THROUGHOUT AND HIGHLY VISIBLE ON THE COVER BOARD.

MR. MC FARLAND: BUT YOUR LIGHTING IS SUFFICIENT, SO THERE IS MINIMAL TRIPPING HAZARD, OBSTRUCTIONS?

MR. WEULE: VERY LITTLE OBSTRUCTIONS REALLY. TYPE PLATES AND CROSS-BONDING, NOT VERY BAD. AND THE LIGHTING IS GOOD. EVERY 50 FEET, I BELIEVE, THERE IS A 12-FOOT FLORESCENT.

MR. MC FARLAND: HOW DO YOU OFF-LOAD ON THE FORE AND AFT? DO YOU HAVE A LADDER?

MR. WEULE: NO. WE DO NOT HAVE EVEN DOOR CAPABILITY.

MR. LOCK: INSOFAR AS OFF-LOADING IS CONCERNED, SIDE DOOR OFF-LOADING IS SIMPLE BECAUSE THERE IS NOT MUCH AGAINST THE CAR FLOOR AND THE SERVICE WALKWAY, SOMETHING IN THE ORDER OF 13, 16 INCHES, SOMETHING OF THAT SORT. AND THAT HAS NOT TO DATE CAUSED ANY PROBLEM. INSOFAR AS END-DOOR LOADING IS CONCERNED, WE HAVE NO SPECIAL EQUIPMENT THAT WE CARRY. WHAT HAS BEEN UTILIZED IS THE MECHANICAL UPPER, WHICH IS MIDWAY BETWEEN THE CAR FLOOR AND STEPPING DOWN TO THE MECHANICAL UPPER AND THEN DOWN TO THE INVERT. BUT AS I SAID BEFORE, THAT IS NOT THE PREFERABLE MEANS OF EVACUATION. SIDE DOOR EVACUATION FROM PATRONS IS IN OUR PROCEEDINGS AND IS WHAT WE FOLLOW.

I WANTED TO MAKE A REMARK CONCERNING EMERGENCY THROUGH STATIONS. OUR EMERGENCY TRIP STATIONS ARE BLUE-LIGHT STATIONS AND ARE OFF THE PLATFORM AT EACH END OF A SUBWAY PLATFORM. THEY ARE REALLY NOT INTENDED FOR USE BY THE PUBLIC. THERE IS NO VISUAL AID DIRECTING THE PUBLIC TO GO OUT TO THE PLATFORM AND TO OPERATE THE EMERGENCY TRIP STATION. THEY ARE NOT LOCKED. THEY ARE NOT BEHIND A GLASS THAT YOU HAVE TO

BREAK. THEY ARE IN A BOX. YOU OPEN THE BOX; THERE IS A PHONE THERE; THE TRIP STATION IS THERE THAT YOU CAN ACTIVATE MANUALLY AND AS I INDICATED, THERE IS A MAINTENANCE PHONE JACK FOR EMERGENCY WIRED COMMUNICATION IN THAT AREA. OUR BLUE-LIGHT STATIONS ARE ALSO LOCATED THROUGHOUT THE ENTIRE LENGTH OF OUR SYSTEM. THEY ARE AT EVERY PORTAL TO A SUBWAY AS WELL AS AT THE END OF THE PLATFORM. THEY ARE AT MIDLINE TUNNEL EMERGENCY EXITS AND ENTRIES AS WELL. THEY ARE LOCATED AT APPROXIMATELY EVERY QUARTER MILE ALONG THE GRADE SECTION OF OUR SYSTEM. AND THEY ARE LOCATED AT POINTS OF ACCESS OF OUR ELEVATED STRUCTURE. BY THAT I MEAN WE HAVE IDENTIFIED POINTS OF ACCESS TO THE ELEVATED STRUCTURE WHERE WE HAVE A STREET DOOR OR UNDERPASS OR MEANS OF GETTING FROM THE STREET TO THE ELEVATED STRUCTURE. AND THE BLUE-LIGHT STATION IS LOCATED TO THE OUTSIDE OF THE AERIAL STRUCTURE SO THAT THE FIRE DEPARTMENT WOULD HAVE USE OF IT BEFORE ENTERING THE TRACKWAY RATHER THAN HAVING TO CROSS THE TRACKWAY AND USE IT.

MR. DONATO: WE HAVE LADDERS INSTALLED ON THE SIDE OF THE TUNNEL. WE HAVE THEM ABOUT EVERY 80 FEET TO THE WHOLE END OF THE SUBWAY. THERE ARE LADDERS. THEY ARE WOODEN LADDERS. THEY HAVE ONE SADDLE LADDER, WHICH IS LONGER THAN THE OTHER ONES. THEY ARE HOOKED INTO THE DOORSILLS AND CAN BE USED TO UNLOAD PEOPLE. IN EMERGENCIES THIS IS USED MAYBE FOR OLDER PEOPLE. BUT PEOPLE JUMP DOWN IF THERE IS EVER AN EMERGENCY, BECAUSE ON OUR SUBWAY THE PASSENGER CAN OPEN THE DOOR IF THEY WANT TO. SO YOUNGER PEOPLE WILL CHOOSE -- IF THERE IS NO DANGER -- THEY MIGHT CHOOSE TO JUMP DOWN WHEN THEY SEE THERE IS AN EVACUATION GOING ON. BY THAT TIME, THE POWER

IS CUT OFF.

OUR TRANSPORTATION PEOPLE LIKE TO USE THE WALKWAY. BUT IT IS A VERY LONG PROCESS TO EVACUATE IF YOU HAVE A THOUSAND PEOPLE ON A TRAIN TO USE A WALKWAY. IT'S A VERY LONG PROCESS, AND IT IS DIFFICULT TO ENFORCE THAT ON PASSENGERS WHO SEE A MUCH FASTER WAY TO EVACUATE. THOSE WHO TAKE THE WALKWAY, ONCE THEY REACH THE END OF THE TRAIN, BECAUSE THE WALKWAY IS VERY NARROW, GO DOWN THE WALKWAY AND WALK.

MR. WEULE: WE ARE DEVELOPING NEW CAR SPECIFICATIONS. I AM SURE YOU KNOW THAT THE C CAR (SIC) WILL HAVE END-DOOR CAPABILITIES.

MR. THOMPSON: WMATA CARS HAVE A LADDER CARRIED BEHIND THE OPERATOR'S CAB. THERE IS NO WAY TO ATTACH TO IT THE VEHICLE ITSELF. IT JUST LIES UP AGAINST THE CAR. PREVIOUS EVACUATIONS WERE DIRECTED TO GO THROUGH THE END DOOR OF THE CAR. BUT NOW THERE HAS BEEN SOME RETHINKING OF THIS AND SIDE-DOOR EVACUATIONS ARE UNDER REVIEW RIGHT NOW. AND THEY ARE ENTERTAINING THE THOUGHT OF A SIDE-DOOR EVACUATION. THAT CAN ONLY BE DONE BY THE OPERATOR, BECAUSE HE HAS CONTROL OF THE VEHICLE. THERE IS NO PASSENGER EVACUATION EFFORT AT ALL. THE OPERATOR UNLOCKS THE DOOR.

MR. MC FARLAND: IF VERN GARRETT CAN EXIT A VEHICLE FROM THAT CATWALK . . .

MR. THOMPSON: THE CATWALK VARIES IN INCHES FROM 13 TO 24 INCHES, DEPENDING ON WHERE YOU ARE OUT IN THE SYSTEM. ADDITIONALLY, THERE ARE MAJOR OBSTRUCTIONS ALONG THERE BECAUSE MANY OF THE ELECTRICAL COMPONENTS OR VENTILATING SYSTEMS ARE INSTALLED DIRECTLY IN THE PATH OF EGRESS.

AND I WAS INTERESTED IN WHAT RALPH SAID YESTERDAY ABOUT REMOVING A LOT OF THESE OBSTRUCTIONS.

WHERE DID YOU PUT THEM? YOU DIDN'T JUST TAKE THEM OUT, DID YOU?

MR. WEULE: SOME COULD BE TAKEN OUT AND WERE TAKEN OUT. OTHERS, LIKE JUNCTION BOXES THAT WERE SMALL ENOUGH, COULD BE MOVED UP HIGH ENOUGH ALONG THE WALL WITHOUT INTERFERING CLEARANCE, OTHERWISE, PUT INTO CROSS PASSAGES.

MR. THOMPSON: I KNOW THROUGHOUT OUR SYSTEM MANY, MANY JUNCTION BOXES, TRANSFORMERS, AND SOME TRAIN GRAPHICS, JUST TURN BACK SIGN, ET CETERA --

MR. GRAINGER: I WANTED TO POINT OUT THAT I RECEIVED THE OTHER DAY THE PROCEEDINGS OF A SYSTEM SAFETY APPLICATION THROUGH SYSTEMWIDE SYMPOSIUM. I DON'T KNOW IF ANYBODY WAS THERE, BUT IT WAS HELD JULY 27, 1980. THERE IS A PAPER THAT I GOT, AND I THINK I WILL COPY IT FOR EVERYBODY. IT IS BY BILL GOSSARD OF THE NATIONAL TRANSPORTATION SAFETY BOARD. AND HE TALKS ABOUT SYSTEM SAFETY AND SMALL RAPID TRANSIT FIRES. I BRING IT UP AT THIS POINT BECAUSE ONE OF HIS POINTS IS, AS WE ALL KNOW, YOU HAVE TO REALLY PLAN ON THE UNEXPECTED. HE HAS TWO PARAGRAPH BLURBS ON THE BART FIRE. HE HAS ABOUT A THREE PARAGRAPH ON THE SEPTA FIRE, JUST A FEW MONTHS BEFORE THE BART FIRE. AND THAT WAS REALLY A COMEDY OF ERRORS.

THE MOTORMAN, HE OPENED HIS DOOR TO HELP THE PEOPLE WHO COULDN'T GET THE SIDE DOORS OPEN. SO THEY WERE KNOCKING OUT WINDOWS. AND WHEN HE OPENED HIS DOOR, THEY SAW THAT HE HAD AN OPEN WINDOW THAT DIDN'T HAVE TO BE OPENED, SO THEY JUST SORT OF PUSHED HIM RIGHT BACK INTO THAT CAB. AND

THE CONDUCTOR WAS FOUR CARS BACK, AND HE HAD TO FORCE HIMSELF THROUGH A CRUSH LOAD AND COME UP AND OPEN THE SIDE DOORS.

"YOU HAVE TO PLAN ON THE UNEXPECTED" WAS REALLY HIS MESSAGE. AND I THINK IT MAY BE WORTHWHILE TO --

MR. MC FARLAND: ADD A LITTLE PANIC.

MR. GRAINGER: YES.

MR. WEULE: I THINK THERE IS A LOT OF RESENTMENT WHETHER THE PASSENGER SHOULD BE ABLE TO GET OUT OF THE CARS ON THEIR OWN. AND THE BART SYSTEM HAS A CLEARLY MARKED PANEL THAT SAYS, "EMERGENCY DOOR HANDLE" THAT COULD EASILY BE PULLED UP AND THERE IS A HANDLE WITH AN ARROW. AND IT IS VERY CLEAR WHAT TO DO. AND WE PUBLISH IT.

AND, AGAIN, THERE WAS A LOT OF FEAR THAT THIS WOULD RESULT IN A LOT OF DISRUPTION -- SOMEBODY CRANKS THAT HANDLE BACK; THE TRAIN COMES TO A STOP -- IT HAS NOT PROVED TO BE THE CASE. WE HAVE HAD TRAINS STOPPED IN THE TRANSWAY TUBE FOR OTHER EMERGENCY REASONS. THERE WAS A LOT OF CONCERN AFTER THE TRANSWAY TUBE FIRE THAT YOU MIGHT HAVE PANIC THINKING THERE MIGHT BE A FIRE AND DASHING OUT ON THE TRACKWAY. IT DIDN'T PROVE TO BE A PROBLEM AT ALL.

MR. LOCK: LET ME ADD A REMARK IN THAT REGARD. INSOFAR AS THE CAR DOOR SUBSYSTEM IS CONCERNED, TWO HAZARDS THAT WE INVESTIGATED WERE THE SITUATION WHERE A DOOR OPENS INADVERTENTLY WHILE THE TRAIN IS IN MOTION AND THE DOOR NOT OPENING WHILE A TRAIN IS STOPPED VIA THE EMERGENCY. WE HAVE THE CAPABILITY OF HAVING EMERGENCY CONTROLS AT EACH DOOR SO THAT WHEN THE TRAIN IS OKAY, PATRONS CAN EXIT. WE ALSO, IN THE CAR, HAVE AN EMERGENCY STOP WHICH IS ACCESSIBLE TO A

PATRON. THERE IS A BIG, RED PUSH BUTTON, AND IT HAS BEEN USED INADVERTENTLY, ESPECIALLY AFTER FOOTBALL GAMES WHEN THE FALCONS LOSE AND WE HAVE FANS WHO ARE A BIT BEERED-UP AND A BIT DISGUSTED. AND WE HAVE HAD A NUMBER OF TRAINS STOPPED ON THE EAST LINE AFTER THE FOOTBALL GAMES.

NONETHELESS, A NUMBER OF PEOPLE ARE VERY STRONG ADVOCATES ON THIS MATTER WITH RESPECT TO PROVIDING A MEANS OF EGRESS FOR A PATRON FROM A TRAIN, THAT HE HAS CAPABILITY OF STOPPING THE TRAIN AND HE HAS CAPABILITY OF EXITING THE TRAIN. THE CTA, FOR ONE, IS A STRONG ADVOCATE FOR PROVIDING THE PATRON WITH A MEANS OF STOPPING THE TRAIN, WITH A MEANS OF EXITING. BASICALLY, WE HAVE PROVIDED THAT SAME CAPABILITY, INSOFAR AS OUR CARS ARE CONCERNED.

MR. LOCK: FROM A HUMAN FACTORS POINT OF VIEW, IN AS FAR AS VEHICLE DESIGN IS CONCERNED, WE CONSIDERED THE MATTER AND WE DEBATED IT ALMOST EFFORTLESSLY WITH RESPECT TO YOUR OPERATION. THE TRAIN OPERATOR NORMALLY USES AUTOMATIC TRAIN STATIONS. WE PUT THE TRAIN IN ATO IN OUR SYSTEM. HE HAS TO PRESS THE TRAIN BUTTON. THE TRAIN ACCELERATES AND IS IN AUTOMATIC CONTROL. IT LEAVES THE STATION. THE TRAIN OPERATOR THEN HAS TO PRESS THE OPEN DOOR. HE THEN HAS TO PRESS CLOSE DOOR. AND THEN HE PRESSES THE PROCEED BUTTON, AND THE TRAIN CONTINUES IN OPERATION. THERE ARE TWO OPEN BUTTONS, ONE FOR THE LEFT SIDE AND ONE FOR THE RIGHT SIDE. THERE ARE ALSO DOOR OPEN BUTTONS AT EACH END OF A CAB, ONE ON THE CONSOLE AND ONE SPECIAL BUTTON ON THE LEFT-HAND SIDE OF THE CAB IN CASE WE HAVE A SIDE PLATFORM STATION, DEPENDING UPON WHETHER WE HAVE A CENTER PLATFORM STATION AND SIDE

PLATFORM STATION. THIS IS A STATION THAT CREATES A POTENTIAL HAZARD WITH RESPECT TO THE TRAIN OPERATOR INADVERTENTLY OPENING THE WRONG SIDE AND CAUSING A POTENTIAL PROBLEM. IN OUR STATIONS, FORTUNATELY, NOT THROUGH DESIGN, I DON'T BELIEVE, BUT THROUGH ACCIDENT, WE REALLY REMEDIED THE PROBLEM, BECAUSE WE HAVE A RAIL IN OUR STATION BETWEEN FOUR SIDE-PLATFORM STATIONS RUNNING DOWN THE CENTER LINE OF THE TRACKWAY WHICH IS USED TO IDENTIFY THE STATION LOCATION. FOR EXAMPLE, THIS RAIL IS APPROXIMATELY WAIST HIGH, SO IF YOU WOULD OPEN THE DOOR IN THE WRONG SIDE OF THE CAR YOU WOULD SEE THIS RAIL RIGHT IN FRONT OF YOU. AND UNLESS YOU ARE BLIND, YOU ARE NOT LIABLE TO TAKE A STEP FORWARD AND FALL ON THE TRACKWAY. AGAIN, IT IS A QUESTION OF WHAT IS PREFERABLE.

MR. DONATO: CONCERNING THAT PROBLEM OF OPENING THE DOOR ON THE WRONG SIDE, WE HAD SOME OCCASION ON THAT IN MONTREAL, BUT WE HAVE MODIFIED THE LOGIC OF THE OPERATION OF THE CARS. WE HAVE A MESSAGE CONTROLLING FROM THE STATION TELLING ON WHAT SIDE THE PLATFORM IS AND THE OPERATOR CANNOT MAKE A PROBLEM ANYMORE.

MR. MC FARLAND: IT STILL IS THE OPERATOR'S PROBLEM.

MR. DONATO: BUT HE CAN'T OPEN THE DOOR ON THE WRONG SIDE, BECAUSE IN SOME CASES WE WANT TO OPEN ONE SIDE OR THE OTHER SIDE, BUT HE CAN'T MAKE A MISTAKE. IT IS ARRANGED WITH HIS LOGIC OF THE DOOR. AS FAR AS OPENING THE DOOR, AS I MENTIONED, THE PASSENGER CAN OPEN THE DOOR FROM INSIDE. THE OPERATOR OR THE PASSENGER CAN ALSO OPEN THE DOOR FROM THE OUTSIDE. THERE IS A PULL CORD ON SOME OF THE DOORS. ON BOTH SIDES AND ON THE PLATFORM SIDE IT IS ABOVE THE PLATFORM,

ON THE OTHER SIDE ALSO WHERE IT IS HIGH ENOUGH. THE OPERATOR, FOR INSTANCE, HE WANTS TO EVACUATE THE TRAIN AND THE PATRONS DON'T, HE CAN PULL THE CORDS AND UNLOCK ALL THE DOORS SO THEY CAN BE OPENED FROM INSIDE AND THEY CAN BE OPENED FROM THE OUTSIDE.

MR. LOW: GETTING BACK TO THE MATTER OF PATRONS OPENING THE DOORS, DO YOU HAVE SOME KIND OF OVERRIDE, EITHER WITH YOUR SYSTEM OR MARTA WHERE YOU COME TO A STOP AND YOU DON'T EVACUATE -- IT IS A STOP THAT IS NOT AN EMERGENCY SITUATION -- DO YOU HAVE AN OVERRIDE THAT THE OPERATOR COULD KEEP THOSE DOORS CLOSED?

MR. DONATO: WE DON'T HAVE AN OVERRIDE, BUT WHAT WE TELL THE OPERATOR IS TO TALK TO THE PATRONS OVER HIS P.A. SYSTEM THAT "THERE IS NO EMERGENCY. IT HAS BEEN DELAYED." BUT IF THE PASSENGER WANTS TO OPEN THE DOOR, HE CAN ALWAYS OPEN THE DOOR.

MR. WEULE: THE ORIGINAL HAD THE ABILITY FOR PATRONS TO GET OUT, BUT IT DID NOT HAVE AN EMERGENCY EGRESS AS YOU DO. OUR NEW DESIGN DOES HAVE THAT. WE HAVE THE ABILITY TO KEEP DOORS CLOSED AT STATIONS. THE ONLY TIME WE DO THAT IS SOME KIND OF SECURITY OR POLICE.

MR. THOMPSON: ONCE THE EMERGENCY MECHANISM IS OPEN FOR THE DOORS, IS THE TRAIN THEN DISABLED FROM MOVEMENT? CAN YOU OVERRIDE AND CONTINUE TO MOVE?

MR. RHINE: IN THE CASE OF BART, IT BYPASSES ALL THE NORMAL PROTECTIVE DEVICES. BUT OTHER THAN THAT, YOU CAN'T MOVE THE TRAIN IN. AFTER THE TRAIN IS STOPPED, YOU COULD GO INTO ROAD MANUAL. YARD MANUAL IS AT VERY LOW SPEED.

MR. LOCK: I WANT TO MAKE A COMMENT CONCERNING DOUG'S INQUIRY WITH RESPECT TO ADDITIONAL CONTROLS OR DOORS.

BESIDES OUR NORMAL DOOR CONTROLS THAT THE OPERATOR ACCESSES IN THE COURSE OF REVENUE SERVICE, HE HAS ANOTHER CONTROL WHEREBY HE CAN LOOK OUT OR HE CAN PREVENT THE END DOOR, THE INSIDE DOOR, THE DOOR CLOSEST TO HIM FROM OPENING. OUR PLATFORM IS 600 FEET. THERE IS A TOLERANCE, INSOFAR AS STOPPING IS CONCERNED. AND ESPECIALLY BECAUSE OF GRADES, YOU SOMETIMES ENCOUNTER SITUATIONS WHERE YOU HAVE PROBLEMS WITH RESPECT TO STOPPING. AND THE END COULD CONCEIVABLY BE OFF THE PLATFORM. IN THAT CASE, THE RECOURSE THE OPERATOR HAS IS TO PROHIBIT IT FROM OPENING OR ELSE NOT TO DUMP HIS LOAD AND TO GO TO THE NEXT STATION, WHICH IS NOT DESIRABLE INSOFAR AS HAVING A HAPPY PUBLIC.

MR. LOW: YOU CAN'T BACK UP?

MR. LOCK: NO. YOU CAN NEVER BACK UP. SUSPENSION, SEVERE DISCIPLINE IF AN OPERATOR EVER ATTEMPTS TO BACK UP. HE DEFEATS THE SIGNALING SYSTEM, BASICALLY.

MR. WEULE: DOES HE HAVE THE ABILITY TO BACK A TRAIN?

MR. LOCK: YES. WE DID HAVE SUCH A SITUATION HAPPEN WHEN WE WERE VERY EARLY IN REVENUE SERVICE. AND UNDER THE CONDITIONS, IT WAS UNDERSTANDABLE. THIS WAS THE LAST TRAIN IN OPERATION FOR THAT EVENING. IT WAS APPROXIMATELY 1:30 IN THE MORNING. AND THE OPERATOR CAME TO A FIVE POINTS STATION. AND A FIVE POINTS STATION IS ONE STATION IN OUR SYSTEM WHERE WE HAVE SIDE AND CENTER PLATFORMS SO THAT YOU CAN ACCESS OR EXIT A TRAIN FROM EITHER SIDE. THE OPERATOR HAS TO OPEN BOTH DOORS FOR PEOPLE TO ENTER AND TO LEAVE. AND EVIDENTLY HE DID

NOT DO THIS. AND EVIDENTLY THE PARTY OR PARTIES WHO WANTED TO EXIT DIDN'T EVEN BOTHER TO LOOK IN BACK OF THEM TO SEE THAT THE OTHER DOOR WAS OPEN. BUT HE CLOSED THE DOOR, SUPPOSEDLY, AND HE PROCEEDED TO THE NEXT STATION, WHICH IS A VERY SHORT SPACE, APPROXIMATELY 2,000 FEET, MAYBE A HALF A MILE, THE OMNI STATION.

HE THEN LEARNED, MUCH TO HIS DISMAY, THAT THERE WAS A GROUP IN THE CAR CLAMORING TO GET OFF AT THE FIVE POINTS STATION. THEY WANTED OUT BADLY. SO HE THEN BACKED THE TRAIN. HE WAS THE ONLY TRAIN IN OPERATION. HE THEN BACKED THE TRAIN TO FIVE POINTS AND LET THEM OFF. AND HE THEN PROCEEDED. THIS WAS LOGGED AS AN UNUSUAL OCCASION. THERE WAS A BIG HUMAN CRY ABOUT THIS OPERATION. AND AS A CONSEQUENCE, IT WAS MADE VERY CLEAR THAT UNDER NO CIRCUMSTANCES CAN YOU OPERATE A TRAIN IN A REVERSE DIRECTION.

MR. DONATO: WE WILL BACK UP A TRAIN IN CERTAIN CASES, BUT THE OPERATOR CALLS AND ASKS PERMISSION; CENTRAL CONTROL SEES WHERE ALL THE TRAINS ARE AND HE CAN GIVE PERMISSION. THEY ARE NOT ALLOWED TO DO IT BY THEMSELVES.

MR. MC FARLAND: ARE THERE ANY OTHER ISSUES ON EMERGENCY EVACUATION?

MR. VON IBSCH: DOES WMATA HAVE THE CAPACITY TO BACK A TRAIN?

MR. THOMPSON: YOU CAN BACK A TRAIN, IF THEY NEED TO REVERSE.

MR. VON IBSCH: YOU DO HAVE A CONTROL SWITCH?

MR. THOMPSON: YOU CAN PUT IT IN MANUAL AND REVERSE AND BACK THE TRAIN FROM THE IMMEDIATE OPERATING CAB, BUT THAT

PRACTICE IS NOT DONE.

MR. MC FARLAND: ARE THERE ANY OTHER ISSUES ON EMERGENCY EVACUATION?

MR. GRAINGER: WALT HAS DONE A LOT OF WORK ON THIS DYNAMIC EGRESS. AND IN OUR PAST PEER REVIEWS, HE HAS ALWAYS SERVED IT WELL, WAS A DEVIL'S ADVOCATE PUTTING ISSUES ON THE TABLE, NOT NECESSARILY SAYING HE BELIEVES IN IT, BUT JUST HE WOULD LIKE TO GET IT DISCUSSED. AND ONE THAT HE PASSED ON TO ME I THINK IS VERY IMPORTANT FROM A COST POINT OF VIEW, IF YOU LOOK AT THE NFPA 130 AND FOUR-MINUTE AND SIX-MINUTE KIND OF THINGS ON MOST NORTHERN STATIONS, THE RATES AND EVERYTHING, IF YOU DO A LITTLE ARITHMETIC, THE BOTTOM LINE IS THERE IS A VOLUME, THE SIZE AND THE STATION BECOMES HUGE AND THE CAPITAL COST IS PRETTY BAD.

MR. LOW: I HAVE SOME PROBLEMS WITH THESE CALCULATIONS, WHICH I WILL DISCUSS WITH YOU SEPARATELY. THEY ARE NOT QUITE AS SIZEABLE AS THEY ANTICIPATE. SOME OF THEM GET LARGE, CERTAINLY, BUT I DON'T BELIEVE IT IS QUITE AS DRASTIC.

MR. MC FARLAND: GEORGE, I THINK ABOUT A YEAR FROM NOW, WHEN WE HAVE FORMULATED A POSITION FROM A PLACE BETWEEN 101 AND 130, I THINK WE WILL PUT IT UP AND LET WALTER TAKE SOME SWINGS AT ALL OF IT.

MR. GRAINGER: WELL, I THINK THE POINT IS, IF PEOPLE ARE GOING TO RESPOND, TO AID BY COMMENTING BEFORE NOVEMBER 13, ONE FOOD FOR THOUGHT WOULD BE IS THE EMPANELING ON THAT TOTAL VOLUME. BECAUSE THAT REALLY HAS A STRONG IMPACT ON THE CAPITAL COSTS.

MR. MC FARLAND: OUR ARCHITECT IS VERY SENSITIVE ON THAT

ISSUE.

MR. LOW: WE HAVE RUN SOME SEPARATE CALCULATIONS BASED ON WHAT WE HAVE NOW, AND THEY ARE NOT QUITE AS DRASTIC AS IT WOULD APPEAR.

MR. GRAINGER: BUT THERE IS STILL AN IMPACT. IS THAT WHAT YOU ARE SAYING?

MR. LOW: WELL, OF COURSE, THERE IS. IT DOES REQUIRE EXTRA EXITS IN EMERGENCY SITUATIONS, NO QUESTION ABOUT IT. BUT IT IS NOT QUITE THE EXTENT AS WALTER ANTICIPATED. THE FORMULA THAT HE USED REALLY ALLOWED FOR THE LENGTH OF VOLUMES BETWEEN STATIONS THAT WOULD BE BASED ON PATRONAGE PROJECTION. HE HAD A VOLUME OF A FULLY-LOADED TRAIN. AND THEY ARE NOT MOSTLY FULLY LOADED IN TERMS OF LENGTH VOLUME THAT YOU HAVE IN A PARTICULAR STATION AREA.

MR. MC FARLAND: MR. DONATO?

MR. DONATO: I WOULD LIKE TO ADD JUST ONE COMMENT CONCERNING THIS TIME TO EXIT THE STATION, WHICH I THINK IS SIX MINUTES. AND THIS IS ONE COMMENT WE MADE WHEN WE ANSWERED THIS REGULATION. WE SAID THAT WE SHOULD TAKE THAT INTO CONSIDERATION. WHEN YOU TALK ABOUT TIME OF EXITING A STATION, IF YOU HAVE MEANS OF PASSING SMOKE, IF YOU HAVE NO MEANS OF CONTROLLING THE SMOKE MOVEMENT OR YOU HAVE MEANS OF CONTROLLING THE SMOKE MOVEMENT, IT SHOULD HAVE A BEARING ON THE TIME TO EVACUATE A STATION. SO MAYBE IT COULD BE ALLOWED A FEW MORE MINUTES IF YOU CAN CONTROL SMOKE.

MR. FARRELLY: AS OF NOW, THE STANDARD IS NOT WRITTEN. I WOULD ACCOMMODATE THAT MODIFICATION. AND THE COPY THAT IS BEING DISTRIBUTED IS VIRTUALLY THE FINAL DRAFT. BUT IT IS NOT

THE FINAL DRAFT WITHOUT THE PUBLIC'S COMMENTS.

MR. SANDBERG: IF I MIGHT COMMENT ON THAT. YOU WILL NOTICE THAT THIS COPY AT THE BACK HAS SOME PAGES THAT ARE OUT OF OTHER VERSIONS, BECAUSE THAT COPY DID NOT INCLUDE FIGURES AND THE SAME CALCULATIONS. SO THE LAST FOUR OR FIVE PAGES ARE OUT OF THERE. THEY ARE THERE TO SUPPLY THOSE MISSING ELEMENTS.

MR. FARRELLY: MAY I ASK YOU IF THOSE TYPED PAGES IN THERE REFLECT THE CHANGES THAT WERE MADE? I DON'T THINK THEY WOULD.

MR. SANDBERG: IN THE COMPARISONS I MADE I DIDN'T FIND ANY CHANGES IN TEXT. BUT I DIDN'T GO THROUGH MORE THAN A FEW PAGES.

MR. LOW: SPEAKING OF THAT 15 VOLUMES THAT THEY MENTIONED, I THINK THEY USED AS A GUIDE DIVIDING YOUR PEAK HOUR BY 4, MULTIPLYING BY 1.5. WE ACTUALLY FIND IN OUR SYSTEM THAT WE HAVE A RATHER FLAT PERIOD THROUGH THE PEAK TWO HOURS OR SO, SO THAT WE COULD POSSIBLY VARY THAT FORM. INSTEAD OF MULTIPLYING BY 1.5, IT COULD BE A LESSER AMOUNT.

RUSS, YOU POINTED THIS OUT BEFORE. I THINK IT IS A VALID OBSERVATION.

MR. DONATO: I WOULD LIKE TO ADD A FEW POINTS THAT I THINK ARE VERY IMPORANT CONCERNING EVACUATION. FOR INSTANCE, IF YOU HAVE AN EMERGENCY ON THE TRAIN AND YOU WANT TO EVACUATE YOUR STATION IN YOUR PROCEDURE, IF YOU SHOULD HAVE SUCH A THING AS PEOPLE IN THE STATION, PUT THE ESCALATOR ON THE WAY UP SO THAT PEOPLE CAN EVACUATE FASTER. OTHER PROBLEMS THAT WE HAVE FOUND IS THAT SEVERAL PEOPLE WILL EVACUATE UP TO

THE PLATFORM LEVEL OR UP TO THE MEZZANINE LEVEL AND THERE THEY FEEL SAFE ENOUGH, YOU KNOW. THEY ARE FAR ENOUGH FROM THE DANGER AND THEY BUNCH THERE. AND THEY WANT TO SEE THE SHOW. AND PEOPLE CAN'T EVACUATE ANY MORE. THEY NEED POLICE THERE FAST TO GET THESE PEOPLE MOVING OUT. OTHERWISE, YOU GET A CORK THERE, AND PEOPLE CAN'T EVACUATE. IT BECOMES VERY DANGEROUS, BECAUSE THE ESCALATORS ARE PUMPING PEOPLE UP.

MR. RHINE: YOU NEED A COPY OF NFPA 130 THERE TO SHOW THEM.

MR. DONATO: PEOPLE ARE GOING OUT EXITING THE STATION. THEY DON'T WANT TO LOSE THEIR FARE, SO THEY ARE WAITING TO GET THEIR TICKET BACK AND TRANSFER TO TAKE THE TRAIN.

MR. MC FARLAND: INSIDE THE GATE.

MR. DONATO: SO THEY DON'T MOVE OUT THERE, AND YOU CAN'T EXIT PEOPLE FROM THE STATION.

MR. THOMPSON: ONE OF THE MOST EFFECTIVE WAYS WE HAVE FOUND TO MOVE PEOPLE OUT OF THE STATION WAS TO ANNOUNCE OVER THE ADDRESS SYSTEM THAT THERE WERE BUSES WAITING UPSTAIRS, WHETHER THERE WERE OR NOT. ANOTHER THING IS THAT, IN MOST CASES, PEOPLE STAY TO THE ADJACENT PLATFORM TO WATCH THE INCIDENT. WE HAVE NEVER HAD A TOTALLY EVACUATED STATION FOR ANY SINGLE FIRE EVER. THERE HAS NOT BEEN ENOUGH PEOPLE TO CONTROL THE SITUATION. AND THEY WILL JUST GO TO A VANTAGE POINT WHERE THEY CAN OBSERVE AS LONG AS THEY DON'T FEEL PERSONALLY THREATENED THERE.

MR. MC FARLAND: IT MAKES ME THINK OF YOUR ZONE SECURITY. IT IS ALMOST A NECESSITY ON EMERGENCY EVACUATION TO HAVE THE POLICE READILY AT HAND.

MR. THOMPSON: THE NUMBER OF OFFICERS THAT ARE IMMEDIATELY AVAILABLE ARE ONE OR TWO. IF THERE IS ANY TRAIN SUPERVISOR PERSONNEL, THEY ARE USUALLY THERE ACTING LIAISON TO THE FIRE OFFICIAL. AND GENERALLY SPEAKING, A FIRE OFFICER, IF THEY ARE NOT IMMEDIATELY IN THEIR AREA THAT THEY ARE WORKING IN AND THEY ARE NOT IN ANY DANGER, IMMINENT OR IMMEDIATELY, THESE PEOPLE ARE LEFT TO THEMSELVES, BECAUSE THERE ISN'T ANY RECOGNIZED IMMEDIATE DANGER THERE.

MR. LUTKUS: THAT PROBLEM ALSO EXISTS IN THE TUNNEL AREAS IF YOU ARE GOING FROM ONE TUNNEL TO ANOTHER. THERE ARE A LOT OF TRADE-OFFS INVOLVED, IF THE ATTEMPT IS TO KEEP THE PATRON ON THE CATWALK. ONE OF THE PROBLEMS IS TO KEEP THEM MOVING. YOU MAY GET THE FIRST PATRON TO MOVE, SAY, 200 FEET ALONG THE CATWALK AND THEN STOP, BECAUSE THEY DON'T KNOW WHERE TO GO. THEN EVERYONE ELSE TRYING TO EXIT THE ORIGINAL BORE GETS JAMMED UP.

ANOTHER ITEM IS YOU MAY GET OLDER PEOPLE OR CRIPPLED PEOPLE THAT WILL FORCE A LOT OF PEOPLE ONTO THE TRACKWAY AND THEN THEY ALSO ARE MOVING UP. AND THE SAME THING COULD HAPPEN THERE, AND THEN AT THE SAME TIME A RESCUE TRAIN COULD BE COMING DOWN. AND THERE MAY BE SMOKE IN THAT BORE, SO THERE ARE A LOT OF TRADE-OFFS, PEOPLE PUSHING, PEOPLE PUSHING OTHER PEOPLE INTO THE THIRD RAIL. SO THE APPROPRIATE EMERGENCY PROCEDURES, BEFORE THE FACT, IS VERY IMPORTANT -- TO EVALUATE ALL OF THE VARIOUS ISSUES.

MR. MC FARLAND: IT IS INDEED.

THANK YOU, GENTLEMEN. LET'S BREAK FOR AN HOUR OR THEREABOUTS.

(LUNCH RECESS.)

AFTERNOON SESSION

1:45 P.M.

MR. MC FARLAND: WE HAVE DISCUSSED EACH OF THESE AREAS EARLIER ON EMERGENCY COMMUNICATION, ON FIRE MANAGEMENT PROCEDURES, AND CENTRAL CONTROL. AGAIN, WE HAVE DISCUSSED THESE IN OUR DELIBERATIONS YESTERDAY AND TODAY. BUT IN THE COMMUNICATION, I THINK, IF WE WERE TO GO TO THE TRANSCRIPTS AND GO THROUGH EVERYTHING SAID ON COMMUNICATION, WE WOULD HAVE A VERY GOOD AREA ON EMERGENCY COMMUNICATIONS. FROM WHAT I RECALL, THERE WAS VERY LITTLE DIFFERENCE BETWEEN WHAT EXISTED IN MARTA AND WHAT I THINK YOU WOULD LIKE TO HAVE PUT IN THE BART; AM I WRONG?

MR. WEULE: WE HAVE THE RADIO CAPABILITIES. WE HAVE SEVERAL TIERS OF HARD WIRE CAPABILITY OF WHICH SEVERAL ARE DEDICATED TO FIRE SERVICES, ALL THAT BACKED UP BY OUR RADIO SYSTEM, PLUS THE MAIN TELEPHONE SYSTEM, WHICH IS NOT CONSIDERED DEDICATED EMERGENCY SYSTEM, AND OUR EMERGENCY PHONE SYSTEM. AND I AM REALLY CONCERNED THAT WE HAVE TOO MANY TIERS OF COMMUNICATION. AND THAT CAN LEAD TO MISUSE, MISCOMMUNICATIONS, AND A LOT OF MORE PROBLEMS DURING A TUNNEL EMERGENCY EVENT. MY POINT IS THAT YOU CAN GO OVERBOARD IN COMMUNICATIONS TOO.

MR. MC FARLAND: YOU HAVE, OR WAS IT AL WHO HAD THE CO-ACCESS?

MR. LOCK: OH, YES. WE DO.

MR. FARRELLY: THERE ARE VERY FEW SYSTEMS THAT RELY ON THIRD-RAIL COMMUNICATION.

MR. RHINE: GEORGE SAID THAT THEY DID AT ONE TIME.

MR. DONATO: THE COMMUNICATION SYSTEM, THE RADIO SYSTEM, WAS PURCHASED IN EARLY '60 FOR THE SUBWAY. THE MESSAGE WAS PASSED BY THE THIRD RAIL. THIS WAS THE BEST EQUIPMENT AT THAT TIME AVAILABLE.

MR. FARRELLY: I THINK CHICAGO MAY HAVE HAD. I DON'T KNOW IF THEY STILL DO OR NOT.

MR. DONATO: THEY INVENTED THAT IN THE EARLY 70'S, AROUND '72 OR '73. BECAUSE WHAT HAPPENED IS, WHEN YOU HAD A SHORT CIRCUIT, YOU WOULD LOSE COMMUNICATION.

MR. THOMPSON: ONE THING ABOUT RADIO COMMUNICATION THAT SHOULD BE CONSIDERED IN BUYING A NEW SYSTEM IS THAT THERE ARE NEW SYSTEMS AVAILABLE WHERE THE PORTABLE, HAND-HELD RECEIVER CAN BE PLUGGED INTO A CONSOLE MOUNT UNIT AND BE USED AS BOTH A BASE AND PORTABLE STATION. AND I THINK IF WE HAD IT TO DO OVER AGAIN WE WOULD CERTAINLY LOOK AT SOMETHING LIKE THAT, BECAUSE WHEN AN OPERATOR LEAVES A CAB, YOU HAVE LOST TOUCH WITH HIM. INSTEAD, I NOTED IN BART THEY HAVE GIVEN ALL YOUR PERSONNEL PORTABLE RADIOS IN ADDITION TO THE CAB. YOU CAN AVOID THAT EXPENSE BY LOOKING AT THAT SORT OF EXISTENCE.

MR. MC FARLAND: WASN'T IT BOB JOHNSON THAT WAS EXPLORING THE VIRTUES OF THAT GRANDEUR?

MR. THOMPSON: I KNOW THAT PARTICULAR TYPE OF SYSTEM IS USED BY FIRE AND POLICE AGENTS, PLUGGING IT IN WHEN YOU GET IN AND YOU TAKE IT WITH YOU WHEN YOU GET OUT.

MR. FARRELLY: THE QUESTION ON THAT WOULD BE ABUSE.

MR. RHINE: THE OPERATOR SIGNS IN EVERY DAY, SO IF IT DOESN'T COME BACK IN IT COMES OUT OF THEIR PAYCHECK. IT HAS

AN OPERATING PROBLEM IN THAT YOU CAN'T COMMUNICATE TO CENTRAL EASILY THROUGH THE RADIO TO THE PASSENGERS, WHICH IS A DESIRED FEATURE FOR SOME PEOPLE. BUT YOU CAN'T EASILY WIRETAP INTO THE CENTRAL COMMUNICATION INTO THE PASSENGERS, WHICH IS A DESIRED FEATURE TO A LOT OF PEOPLE. AND THAT IS ONE DRAWBACK.

MR. MC FARLAND: WE WERE JUST DISCUSSING THE EMERGENCY COMMUNICATION AND WE WERE TALKING ABOUT THE HAND-HELD COMMUNICATORS THAT PLUG INTO THE CAB. AND IF YOU WANT TO WALK AROUND OR SUCH, YOU HAVE COMMUNICATION WITH YOU.

DID SOMEONE ELSE MENTION THAT WE HAVE A DIFFERENT COMMUNICATION PRACTICE BETWEEN THE COUNTY AND THE CITY?

MR. SALYER: WE ARE ON DIFFERENT FREQUENCIES, DIFFERENT RADIO FREQUENCIES.

MR. MC FARLAND: WE HAVE ONE COUNTY STATION.

MR. SALYER: ONE COUNTY IN THE WHOLE GROUP?

MR. LOW: SO FAR.

MR. MC FARLAND: I THINK WE HAVE TOUCHED ON MOST OF THE FIRE EMERGENCY ASPECTS OF THE COMMUNICATIONS. ARE THERE ANY ISSUES -- MR. DONATO?

MR. DONATO: WE HAVE RADIOS IN THE CARS, COMMUNICATORS TO CENTRAL CONTROL. AND WE ALSO HAVE THE PORTABLES. THE PORTABLES WERE PURCHASED ESPECIALLY WHEN WE GO TO ONE-MAN CAR, IF WE EVER GO TO ONE-MAN CAR. BECAUSE WHEN A RADIO OPERATOR LEAVES HIS POST, YOU NEVER KNOW IF HE IS EVER GOING TO COME BACK. SO IF YOU HAVE A ONE-MAN OPERATION, HE NEEDS PORTABLES WHEREVER HE GOES TO INSPECT A TRAIN, OTHERWISE, YOU LOSE TOUCH WITH HIM.

MR. MC FARLAND: I SEE.

MR. DONATO: WE HAVE A PRIVATE EXCHANGE WITH PRIORITY NUMBERS. WE HAVE USED THAT FOR MAINTENANCE, AND WE USE THAT ALSO FOR EMERGENCIES. SINCE THE FIREMAN, WHEN HE COMES ON THE SITE, AND THEY WANT TO CONTACT THEIR ALARM CENTRAL, THEY USE THAT PHONE; THEY HAVE A SPECIAL NUMBER; THEY HAVE PRIORITY; THEY OVERRIDE ALL THE OTHER COMMUNICATION. THEY CAN USE ANY PHONE IN OUR SUBWAY. I THINK THE NUMBER IS 4059. AND THEY GET DIRECTLY TO THEIR ALARM SYSTEM AND OVERRIDE ALL THE OTHER PHONES.

WE ALSO HAVE A CERTAIN AMOUNT OF DIRECT LINES FOR TRANSPORTATION USE ON THE PLATFORM. IT CONNECTS DIRECTLY TO CENTRAL CONTROL.

MR. THOMPSON: ON WMATA, THE TELEPHONE SYSTEM HAS A DIRECT LINE CABLE WHERE THE PASSENGER CAN WALK UP TO ANY OF THE WAYSIDE TELEPHONES, HIT THE ASTERISK BUTTON AND GET A DIRECT LINE TO CENTRAL CONTROL. THE BAD FEATURE ABOUT THIS IS, IF YOU ARE THE FIRST PERSON TO HIT THE ASTERISK BUTTON, YOU WILL GET THE ONLY AVAILABLE EMERGENCY LINE. IF ANOTHER PERSON HAS AN EMERGENCY REMOTELY LOCATED TO THAT, HE WILL HAVE TO WAIT. AND HE WOULDN'T BE ABLE TO GAIN ACCESS AND MODIFICATION UNDER WAY TO EXPAND THAT, BECAUSE AS THE SYSTEM GROWS LARGER, WE CAN ANTICIPATE MORE THAN ONE INCIDENT AT ONE TIME IN THAT REGARD.

ALSO, OUR CENTRAL CONTROL AREA MAINTAINS DIRECT LINE COMMUNICATIONS WITH ALL THE NEIGHBORING FIRE AND POLICE, EMS JURISDICTION, AND SOME OF THE MORE UNUSUAL PLACES LIKE THE SECRET SERVICE.

MR. LOCK: AT MARTA WE DESIGNATE RADIO AS "SAFETY

CRITICAL." THAT MEANS, IF IT BECOMES UNOPERATIONAL, A TRAIN HAS TO BE TAKEN OUT OF THE REVENUE SERVICE AND CAN'T BE PUT INTO REVENUE SERVICE IF THE TRAIN IS NOT FUNCTIONING.

JUST LIKE GEORGE INDICATED, THE OPERATORS ARE ALSO ISSUED HANDSETS. SO IF THEY MUST LEAVE THE CAB, THEY CARRY THEIR HANDSETS AND IT IS AN ALTERNATE MEANS OF COMMUNICATION.

INSOFAR AS COMMUNICATION WITH THE FIRE DEPARTMENT AND OUTSIDE, MARTA IS PRETTY HUMOROUS FROM MY POINT OF VIEW. INITIALLY, WHEN WE WERE TALKING ABOUT ALARMS AND HOW WE WOULD COMMUNICATE WITH THE FIRE DEPARTMENT, WE FIRST WERE CONSIDERING THAT WE WOULD HAVE OUR ALARMS GO DIRECTLY TO THE LOCAL FIRE DEPARTMENT, NOT PASS THROUGH MARTA CENTRAL CONTROL. WE WERE DISCHARGED FROM THAT APPROACH. THE FIRE DEPARTMENT INDICATED WHERE SUCH A SCHEME HAD BEEN TRIED PREVIOUSLY, THEIR FALSE ALARM RATE WAS JUST TOO HIGH AND THEY WERE RESPONDING TO MORE FALSE ALARMS THAN THEY COULD IMAGINE. WHEN WE BECAME OPERATIONAL WE APPROACHED THAT COMMENT BECAUSE THE FALSE ALARM RATE, ESPECIALLY ON SMALL DETECTORS IN OUR SYSTEM, LEAVES MUCH TO BE DESIRED. WE ALWAYS HAVE FALSE ALARMS. AND IF THERE IS ANYTHING WE ARE TRYING TO DO IS TO SCRUTINIZE VERY CAREFULLY THE NUMBER AND LOCATION OF THE FIRE ALARMS WE INSTALL IN OUR SYSTEM NOW. IT IS JUST NOT WORTH THE EFFORT INSOFAR AS THE HIGH FALSE ALARM RATE IS CONCERNED.

AND THE OTHER THING IS THAT WE, IN OUR SYSTEM DESIGN, DID HAVE DIRECT LINES WITH THE FIRE DEPARTMENT FROM CENTRAL CONTROL. WE HAD DIRECT LINES WHERE WE WOULD ALSO BE ABLE TO REACH THE FIRE DEPARTMENT. AND IN OUR CASE IT DIDN'T WORK BECAUSE WE FOUND, THROUGH EXPERIENCE, THAT FIRE

JURISDICTIONS IN OUR AREA FOR ONE REASON OR ANOTHER DID NOT RESPOND TO DIRECT LINES IMMEDIATELY, AND IN SOME CASES WE HAD DIFFICULTY IN RAISING ANY RESPONSE AT ALL. WHEREAS IF YOU CALL IN ON A 911, THEY ARE WITH YOU LIKE THAT. AND AS A CONSEQUENCE, BECAUSE OF THIS DIFFICULTY IN EXERCISING THE SYSTEM REPEATEDLY AND HAVING PROBLEMS IN CONTACTING THE FIRE DEPARTMENT, WE DROPPED OUR DIRECT LINES AND WE NOW DIAL IN AS ANYONE DOES.

MR. MC FARLAND: AND IT WORKS MUCH BETTER?

MR. SALYER: IN THE CITY OF LOS ANGELES WE DON'T HAVE DIRECT LINES TO THE FIRE DEPARTMENT, SO THAT WOULDN'T BE A CONSIDERATION IN THE CITY.

MR. MC FARLAND: JUST DIAL IN?

MR. SALYER: RIGHT.

MR. WEULE: THAT DOESN'T MEAN YOU COULDN'T PUT THEM IN.

MR. SALYER: THAT'S CORRECT.

MR. FARRELLY: WE HAVE PRESENTLY TWO SYSTEMWIDE RANGE CHANNELS, ONE IS DEDICATED TO OPERATIONS AND THE OTHER POLICE. WE ARE CURRENTLY, IN LODGING THIS SYSTEM, TO HAVE A THIRD CHANNEL SO IN THE EVENT OF AN INCIDENT, THAT THIRD CHANNEL COULD BE DEVOTED EXCLUSIVELY TO COMMUNICATION CONCERNING A PARTICULAR INCIDENT. ALSO, ALL OUR TELEPHONES ALONG THE WAYSIDE HAVE THE CAPABILITY OF BEING ATTACHED INTO THE RADIO SYSTEM. SO FROM ANY TELEPHONE, BY GOING THROUGH CONTROL CENTRAL, YOU CAN GET ONTO THE RADIO SYSTEM AS WELL AS MAKING A CERTAIN AMOUNT OF OUTGOING CALLS. WE FIND IT QUITE FLEXIBLE.

AND ANOTHER THING THAT WE HAVE GAINED IN THE AREA OF COMMUNICATION IS TO FURNISH THE FIRE SERVICES POWERED

EQUIPMENT BECAUSE OF INCOMPATIBILITY OF VARIOUS FIRE JUSTIDICTIONS. SO WE HAVE TRIED TO GET THEM STANDARDIZED PIECES OF EQUIPMENT SO THEY CAN COMMUNICATE WITH EACH OTHER EASILY.

MR. MC FARLAND: BUT WITH THIS CAPABILITY OF ATTACHING CENTRAL, CENTRAL COULD BE AN INTERMEDIARY BETWEEN TWO DIFFERENT FIRE FREQUENCIES.

MR. FARRELLY: IT COULD, BUT IT IS NOT PART OF THE GAME PLAN BECAUSE I THINK THAT WOULD JUST ADD ANOTHER POTENTIAL FOR CONFUSION.

MR. DONATO: I SHOULD HAVE, IN OUR CASE, ALSO TWO MORE FREQUENCIES FOR RADIO, AND THIS IS ONE FOR MAINTENANCE, FOR SERVICE AND ONE FOR TRANSPORTATION ALSO. BECAUSE WE ARE PART OF THE BUS SYSTEM, SO WE HAVE TWO MORE FREQUENCIES FOR SERVICE.

MR. MC FARLAND: HOW MANY FREQUENCIES?

MR. RHINE: FOR THE METRO RAIL PROJECT YOU CAN LOOK FOR A TENTATIVELY GIVEN THREE FREQUENCIES, BUT WE FEEL THAT WE WILL PROBABLY NEED FIVE AND MAYBE EVEN SIX. WE ARE GOING TO REQUIRE THREE, AND THEY'RE IN, I BELIEVE, THE VHF BAND. WE WOULD LIKE TO HAVE THEM ALL IN ONE BAND, SO WE WILL RETAIN THESE. AND TO RETAIN THEM YOU HAVE TO KEEP THEM FOR ALL TESTS. WE WILL PROBABLY TRY FOR FIVE, MAYBE SIX. WHICH WOULD INCLUDE IN-YARD FREQUENCIES OR SOME MEANS OF RADIO FREQUENCY IN THE YARD SO YOU DON'T HAVE THE PROBLEM OF ONE PERSON, ONE YARD THINKING HE IS TALKING TO SOMEBODY IN THAT YARD AND IN REALITY TALKING TO SOMEBODY IN THE OTHER YARD AND SAY, "MOVE THAT TRAIN ON TRACK SO-AND-SO," AND SAY, "THERE IS NO TRACK

SO-AND-SO AND THERE IS NO TRAIN THERE." BUT IT IS POSSIBLE TO USE THE SAME FREQUENCE WITH VERY LITTLE POWER.

MR. THOMPSON: WE HAVE FOUR OPERATING RAIL FREQUENCIES FOR THE MAIN LINES, ONE FOR POLICE AND ONE FOR MAINTENANCE. IN ADDITION, THE PHONE SYSTEM HAS MANY, MANY USES. THERE IS A PARTY LINE CAPABILITY WHERE UP TO FIVE PERSONS CAN COME OVER FROM EITHER WITHIN THE PHONE SYSTEM OR OUT. BY DIALING SPECIFIC NUMBERS, YOU CAN GAIN ACCESS TO THIS SYSTEM. THIS SYSTEM IS BROKEN DOWN TO AN APPLICATION SYSTEM WHERE THERE ARE TEN LINES PER NUMBER OR TEN PHONES THROUGHOUT THE SYSTEM. AND THERE ARE CERTAIN INTERSTATION DIALING FEATURES. IT IS KIND OF -- AS YOU TELL MORE AND MORE PEOPLE ABOUT THE SYSTEM, IT JUST GENERALLY CONFUSES THEM, SO A LOT OF INFORMATION IS NOT GIVEN OUT TO THE FIRE AGENCIES, ET CETERA, BECAUSE IT COMPOUNDS THE ERROR PROBABILITY.

MR. MC FARLAND: ANY OTHER COMMENTS?

MR. LOCK: I WOULD JUST LIKE TO REEMPHASIZE OUR EXPERIENCE ONCE MORE. I AM CERTAIN I MENTIONED THIS YESTERDAY, BUT INSOFAR AS EMERGENCY COMMUNICATIONS ARE CONCERNED, INITIALLY OUR RADIO SPECIFICATIONS PROVIDED FOR MARTA COMMUNICATION. AND THE RADIOS WERE TO BE USED ROUTINELY DURING THE COURSE OF OPERATION AND IN EMERGENCIES. AS WE BEGAN TO DEVELOP A DIALOGUE WITH THE EMERGENCY SERVICES, AND AS WE BEGAN PLANNING FOR EMERGENCIES, WE FOUND OUT THAT WHAT WE SHOULD HAVE DONE IS PROVIDE FOR A CAPABILITY FOR ALL THE JURISDICTIONS TO COMMUNICATE SURFACE-TO-TUNNEL THROUGHOUT OUR SYSTEM. AND OUR EMERGENCY JURISDICTION IS ON DIFFERENT BANDS. SOME ARE ON UHF AND SOME

ARE ON VHF.

YOU SHOULD ADDRESS IT INITIALLY RATHER THAN OTHER FACTS AND RECONCILE TO THE FACT THAT THEY HAVE TO HAVE THEIR OWN COMMUNICATIONS. THEY REALLY DO NOT READILY ACCEPT THE CONCEPT OF CENTRAL ACTING AS AN INTERMEDIARY. THEY WANT TO USE THEIR FREQUENCY. THEY WANT TO KIND OF TALK TO THEIR PEOPLE IN THE EMERGENCY MEDICAL SERVICES. IN OUR EXPERIENCE, THEY ARE EVEN MORE ADAMANT IN THAT REGARD. THEY WANT TO BE ABLE TO HAVE ACCESS TO THE HOSPITALS DIRECTLY. AS A CONSEQUENCE, IT IS JUST BEST TO CONSIDER THAT YOU ARE GOING TO PROVIDE A SURFACE-TO-TUNNEL COMMUNICATION ABILITY FOR ANY COMMUNICATION.

MR. DONATO: I WOULD SUGGEST THAT YOU CONTACT YOUR POLICE. WE HAVE A PROBLEM IN MONTREAL WHERE THE ROBBERS AND THIEVES, PEOPLE THAT STEAL FROM BANKS, AND THINGS LIKE THAT, THEY CURRENTLY USE THE SUBWAY TO ESCAPE BECAUSE THEY KNOW THAT THE POLICE HAVE NO COMMUNICATION IN THE SUBWAY. AND IT IS A BIG PROBLEM FOR THE POLICE. AND THEY CAME TO SEE US MANY TIMES. HOW THEY COULD HAVE COMMUNICATION IN THE SUBWAY WAS A MULTI-MILLION-DOLLAR DEAL. IT COULD HAVE BEEN ADDRESSED RIGHT AT THE BEGINNING, BECAUSE RIGHT NOW THEY HARDLY HAVE ANY MEANS OF FINDING THESE THIEVES ONCE THEY GET IN THE SUBWAY.

MR. RHINE: THAT IS ONE OF THE EXTRA CHANNELS THAT WE DIDN'T CONSIDER. THEY WERE LOOKING FOR A SECURITY OR POLICE CHANNEL. WE HAVE OUR OWN POLICE FORCE HERE AND WE ALSO WANT TO MAKE SURE THAT THE CITY JURISDICTION POLICE FORCE HAS A CHANCE TO COMMUNICATE ALSO. THAT IS ONE OF THE REASONS WE

NEED ADDITIONAL FREQUENCIES.

MR. THOMPSON: ONE MORE THING -- METRO IS ABOUT A YEAR AWAY FROM THE INSTALLATION OF A COMPLETE FIRE AND EMS ON JURISDICTIONAL FREQUENCY SYSTEMS FOR THEIR USE IN THE TUNNELS WITH SOME PARTICULAR DUPLEX ARRANGEMENTS FOR DUAL-CHANNEL BROADCASTING AND RECEPTION WHERE JURISDICTIONAL BOUNDARIES SERVE AS A RESPONSIBILITY TO DIFFERENT AGENCIES AND ESPECIALLY HARD-WIRE SYSTEMS UNDER THE RIVER.

MR. RHINE: THAT WAS AN OUTGROWTH OF BART.

MR. THOMPSON: THAT WAS A DIRECT OUTGROWTH FROM THE EXPERIENCE IN BART, AND IT WAS AGAIN REENFORCED BY THE SMALL FIRE WE HAD IN THE RIVER SECTION.

MR. MC FARLAND: ARE THERE ANY OTHER COMMENTS ON COMMUNICATIONS? I WAS INTERESTED IN THE PRIORITY MANAGEMENT OF JURISDICTIONAL CHAIN OF COMMAND. ONCE THE FIRE DEPARTMENT IS ON THE SCENE, IN THE EVENT OF A FIRE, THE FIRE DEPARTMENT IS IN COMMAND. BUT IN READING THROUGH THE BART EXPERIENCE, THE QUESTION THERE IS, IF YOU HAVE MORE THAN ONE JURISDICTION, HOW DO YOU ESTABLISH CHAIN OF COMMAND PRIORITIES? IS THERE ANY STANDARD PROCEDURE THAT IS FAIRLY COMMON AMONGST THE --

MR. LOCK: ON THE MARTA SYSTEM WE HAVE IN OUR EMERGENCY CLAIM EACH LINE SECTION SPECIFICALLY IDENTIFIED. WE IDENTIFY THE COMPANY THAT HAS RESPONSIBILITY AND THE BACKUP JURISDICTION THAT BACKS THEM UP. SO EACH PORTION OF OUR SYSTEM IS IDENTIFIED WITH RESPECT TO WHO SERVES INSOFAR AS EMERGENCIES AND WHO BACKS THEM UP. THAT IS THE PROCESS THAT WE FOLLOW.

MR. MC FARLAND: YOU WORKED OUT AN AGREEMENT BETWEEN

EACH OF THE AUTHORITIES, EACH OF THE JURISDICATIONS AND TO PROCEDURES, PRIORITIES, AND CHAIN OF COMMAND?

MR. LOCK: AND WE HAVE A DOCUMENT IN THE EMERGENCY PLAN. WE HAVE IT DOCUMENTED, SO THERE IS NO QUESTION THAT, IF WE HAVE AN EMERGENCY AT THIS LOCATION, THERE IS NO QUESTION AS TO WHO RESPONDS AND WHO BACKS THEM UP.

MR. WEULE: WE HAVE SEVERAL CASES WHERE SHOULD WE HAVE A FIRE RECORDED IN THE AREA WE CALL TWO FIRE DEPARTMENTS, SAN FRANCISCO AND OAKLAND, A PRIME EXAMPLE OF THAT. AND BY FORMER AGREEMENT THEY ARE RESPONSIBLE FOR WORKING OUT AMONGST THEMSELVES WHO IS IN CHARGE. ESSENTIALLY, THAT RESTS WITH WHOSE JURISDICTION DOES IT HAPPEN TO BE IN. BUT IT REALLY DOESN'T PRESENT AN OPERATIONAL PROBLEM AT THE TIME. WE HAVE GIVEN THE CONTROL CENTER THE PRECISE LOCATION OF JURISDICTIONAL BOUNDARIES.

PART OF THE AGREEMENT IS, IF IT IS CLOSE AND THEY ARE CALLED, IF IT IS NOT THEIR JURISDICTION, THEY DON'T GO HOME AND WAIT FOR SOMEBODY TO COME. BUT IT IS A MATTER OF A FORMAL AGREEMENT. AND I THINK IT IS IMPORTANT THAT THOSE BE DEFINED AND AGREED TO IN A MUTUAL EFFECT.

MR. THOMPSON: IN REGARD TO JURISDICTIONAL QUESTIONS, WE CONSULT WITH THE TWO FIRE DEPARTMENTS AND LET THEM DECIDE WHO IS GOING TO ASSUME RESPONSIBILITY IN CERTAIN AREAS. OF COURSE, IT IS IN THEIR PHYSICAL BOUNDARY, THE AGENCY THAT NORMALLY HAS OR IS IN CHARGE OF THAT AREA, TAKES RESPONSIBILITY FOR IT. BUT IN SOME CASES IT MAY BE CLOSER TO ANOTHER AGENCY AND THEY MAY REQUEST A FORMAL AGREEMENT BETWEEN THOSE AGENCIES ASSISTED IN THAT MATTER. BUT WE

REALLY DON'T HAVE THIS PROBLEM OCCURRING WITH US TOO MUCH, BECAUSE WE HAVEN'T CROSSED THAT MANY BOUNDARIES.

MR. MC FARLAND: I WOULD LIKE TO RAISE A QUESTION. IN TALKING TO BALTIMORE AND LOOKING AT SOME OF OUR DOCUMENTS, THERE HAVE BEEN DIFFERENT APPROACHES TO DIFFERENT AUTHORITIES AND THEIR MANNER IN WHICH THEY HAVE SOUGHT COOPERATION WITH THE FIRE DEPARTMENT, POLICE DEPARTMENTS ARE A COMPLETELY DIFFERENT ISSUE. FOR EXAMPLE, SET UP A FIRE MARSHAL COMMITTEE. THEY HAVE A NUMBER OF COMMITTEES. AND TO A LARGE DEGREE, DELEGATED TO THAT COMMITTEE THEIR ABILITY TO MAKE AGREEMENTS. OTHER AUTHORITIES HAVE DONE SIMILARLY. I THINK A MAJORITY OF YOU HAVE NOT USED A COMMITTEE APPROACH IN DIRECT ONE-TO-ONE. I WONDER IF YOU WOULD SPEAK ON THAT.

MR. WEULE: DURING THE DESIGN PHASE -- AND IT WAS WELL INTO THE DESIGN PHASE, A COMMITTEE WAS APPOINTED BY THE VARIOUS DEPARTMENTS, AND IT WAS FOUR OR FIVE OF THE FOURTEEN THAT REPRESENTED THE FIRE DEPARTMENT. THE STATE FIRE MARSHAL WAS ALSO ASSIGNED TO JOIN THAT COMMITTEE, AND BART REPRESENTATIVES WERE ASSIGNED. IT WAS FORMAL MINUTES DECIDING THE VARIOUS ISSUES AS THEY WENT THROUGH. STATION EXITING IS PROBABLY AN EXCELLENT EXAMPLE OF THAT. WE USED A DYNAMIC CONCEPT OF THAT, ALTHOUGH IT IS NOT THE SAME ONES DESCRIBED NOW.

SO EACH CASE WAS TREATED IN THAT GROUP ONCE WE WERE IN OPERATION. THAT COMMITTEE STILL EXISTS, BUT NOT IN THAT FORM. NOW THERE ARE REPRESENTATIVES FROM EACH OF THE 14 FIRE DEPARTMENTS ON A COMMITTEE. THEY MEET MONTHLY, ADDRESS JOINT OPERATIONAL ISSUES.

MR. MC FARLAND: THEY MEET MONTHLY?

MR. WEULE: YES.

MR. SALYER: OURS WOULD BE VERY SIMILAR TO THAT. THE ONE FLY IN THE OINTMENT, IF YOU WOULD CALL IT, WOULD BE THE COUNTY FIRE DEPARTMENT. AND IT WOULD BE THE WEST HOLLYWOOD STATION. IF A FIRE OCCURRED IN THAT STATION, MOSTLY THEY WOULD BE IN CHARGE OF IT. THERE WE WOULD HAVE A MUTUAL AID AGREEMENT, AS WE WORK VERY CLOSELY WITH THEM.

MR. LOCK: ANOTHER POINT, INSOFAR AS THIS MATTER IS CONCERNED, THAT WE FOUND TO BE OF GREAT CONCERN WAS THE FIRE PROTECTION IN THE AGREEMENT INSOFAR AS THE YARDS AND SHOPS ARE CONCERNED. THE YARD REPRESENTS A TREMENDOUS INVESTMENT INSOFAR AS VEHICLES. A CAR IS A MILLION DOLLARS. YOURS WILL BE IN EXCESS OF THAT. THERE ARE A NUMBER OF DIFFERENT DESIGN CONCEPTS THAT THE INDUSTRY HAS USED INSOFAR AS PROTECTING YARDS. AND THIS WAS AN IMPORTANT MATTER WITH US. AND IT TOOK SOME TIME INSOFAR AS DIALOGUE WITH THE LOCAL FIRE JURISDICTIONS WAS CONCERNED TO INVOLVE A CONCEPT THAT WAS MUTUALLY AGREEABLE TO ALL PARTIES. AND YOU SHOULD CONSIDER YOUR YARD AND FIRE PROTECTION DESIGN AS CAREFULLY AS YOU DO YOUR MAINTENANCE DESIGN FROM MY POINT OF VIEW.

MR. DONATO: NOW THAT WE ARE EXTENDING THE SUBWAY, WE ARE GOING INTO A SMALL MUNICIPALITY. SOME OF THEM ARE FAIRLY WELL ORGANIZED AS FAR AS FIRE IS CONCERNED, OTHERS ARE SMALL. WE HAVE VOLUNTEER FIREMEN. WE HAVE SEEN THE CHIEF OF FIREMEN AND DISCUSSED THAT WITH THEM. WE DON'T HAVE A PROBLEM WITH THAT LEVEL. THE PROBLEM IS AT A HIGHER LEVEL. A QUESTION OF JURISDICTION IS IMPORTANT.

WHAT COMPLICATES THINGS IS THAT THE CITY OF MONTREAL LABOR AGREEMENT, IF THEY GO FIGHT A FIRE OUTSIDE THE CITY, THEY GET PAID DOUBLE TIME. SO THE SOLUTION WE HAVE FOUND SO FAR IS, IF WE HAVE A FIRE OUTSIDE THE CITY, WHICH NATURALLY WOULD BE CLOSEST TO MONTREAL, WE CALL BOTH AUTHORITIES AND WE ASK THEM BOTH TO RESPOND. WE ASK THEM AT THE CHIEF LEVEL TO DECIDE WHAT THEY ARE GOING TO DO.

FIGHTING A FIRE IS A WORK OF A SPECIALIST. I DON'T THINK WE CAN DECIDE AHEAD OF TIME WHAT A SPECIALIST CAN DO. IT IS UP TO THEM AT THAT TIME TO KNOW WHO IS GOING TO DO WHAT. WE CALL BOTH. AND WE TOLD THE CITY OF MONTREAL IF THERE IS ANY BILL BECAUSE THEY GO OUTSIDE THE CITY, THEY SEND US THE BILL. WE WILL PAY FOR IT. BUT THIS IS A POSITIVE ACTION THAT WE TOOK. WE DON'T HAVE ANY WRITTEN AGREEMENT AT THE POLITICAL LEVEL, BUT THIS IS OUR ATTITUDE NOW.

MR. GRAINGER: I WANT TO PASS ON A QUESTION. ARE THERE ANY PROBLEMS WITH CONTINUITY OF THE DECISION-MAKING PROCESS? FOR EXAMPLE, YOU CAN MAKE AN AGREEMENT, WHETHER IT IS WRITTEN OR OTHERWISE, AND THEN FOUR MONTHS LATER COMES THE CHANGE, A YEAR LATER COMES ANOTHER CHANGE AND YOU HAVE DESIGNED TO THE ORIGINAL DECISION.

HAS THERE BEEN ANY EXPERIENCE LIKE THAT?

MR. MC FARLAND: WE WILL HAVE CRITERIA BEFORE WE DO ANY DESIGN. THIS IS A POLICY THAT HAS BEEN SENT DOWN HERE, AS HAS BEEN IN THE PAST. IT HAS BEEN A LUXURY. BUT I THINK WITH CRITERIA AND A BASE LINE ESTABLISHED WE WON'T HAVE THIS PROBLEM OF CONSTANTLY CHANGING AGREEMENT, AT LEAST WE HOPE. BUT WE ARE MAKING A CONCERTED EFFORT HERE TO DEVELOP CRITERIA,

DEVELOP CRITERIA DOCUMENTS, BASE LINE CONFIGURATIONS, AND THEN MAINTAIN THAT CONFIGURATION AND UPDATE IT OFFICIALLY, NOT VERBALLY OR BY AD HOC.

MR. GRAINGER: HAS THAT BEEN A PROBLEM AT ALL WITH OTHERS?

MR. WEULE: YES. IT HAS BEEN. AND THE BEST WAY TO HANDLE THAT TYPE OF THING IS BY INITIATING A CONFIGURATION OR DOCUMENTATION CONTROL AND ALSO ENCOURAGE THE FIRE DEPARTMENT THAT YOU ARE DEALING WITH THE SAME THING. WE HAVE FOUND, AFTER WE ASKED ALL THE FIRE JURISDICTION TO SHARE WITH US THEIR EMERGENCY PLANNING RELATED TO BART, DOCUMENTS THAT WERE OUT OF DATE BY TEN YEARS, EVEN THOUGH THERE WERE RECORDS INDICATING THAT THEY HAD RECEIVED -- OR AT LEAST UPDATES HAD BEEN SENT THAT PEOPLE THAT HAD BEEN ASSIGNED HAD RETIRED OR TRANSFERRED AND NOBODY KNEW WHAT TO DO WITH THIS SET OF DOCUMENTS.

BUT GETTING A JOINT CONTROL ON THE DOCUMENTATION AND A GOOD OPENING EXCHANGE OF INFORMATION SO WHEN YOU DO EXCHANGE A SYSTEM OR MODIFY OR DETERMINE THERE ARE BETTER WAYS TO APPROACH A PARTICULAR PROBLEM, THEY WILL DO THAT. YOU WILL NEVER START AND NOT MODIFY. AND THE BEST WAY IS A GOOD FORMALIZED SYSTEM CONTROL. AND I THINK THAT HAS BEEN DONE.

MR. THOMPSON: MANY OF THE QUESTIONS REGARDING JURISDICTION AND JUST GENERAL FIRE SERVICE ARE COORDINATED THROUGHOUT THE METRO LIAISON OFFICER'S SUBCOMMITTEE, WHICH IS CHAIRED THROUGH THE COUNCIL OF GOVERNMENT AND THE COUNCIL OF GOVERNMENT THROUGH THEIR REGIONAL BASE. THEY PROVIDE THE

SUPPORT FOR THAT COMMITTEE IN RECORD KEEPING, IN RECORDING WHAT GOES ON.

MR. MC FARLAND: YOU HAVE A FORMAL AGREEMENT THROUGH COUNCIL OF GOVERNMENTS?

MR. THOMPSON: IT IS COORDINATED THROUGH THE COUNCIL OF GOVERNMENTS AND ITS SIGNATORIES WITH THE LOCAL POLITICAL JURISDICTIONS, AND THROUGH THEIR METRO LIAISON OFFICER THEY REPRESENT THE DIFFERENT JURISDICTIONAL PROPERTIES. AND IT IS THROUGH THESE MEN, THEN, THAT THE JURISDICTIONAL DISPUTES ARE SETTLED AND THEY SPEAK ON BEHALF OF THEIR FIRE CHIEF. SO THEY ARE IN POWER TO REACT TO ANY SITUATION THAT CAN COME UP. AND WE CERTAINLY PRESENTED THEM WITH A NUMBER IN THE PAST SEVERAL YEARS.

MR. MC FARLAND: THIS SEEMS TO BE THE DIRECTION --

MR. THOMPSON: GENERALLY SPEAKING, IF IT INVOLVES A FIRE SERVICE, WE TAKE IT TO THEM AND LET THEM WALK IN OUR SHOES, MORE OR LESS. AND THEY LEND THEIR WISDOM TO THE SITUATION, AND WE COME UP WITH AN ANSWER THAT IS ACCEPTABLE USUALLY TO BOTH PARTIES. NOT EVERYTHING THAT THE FIRE OFFICERS HAVE TOLD US TO DO HAS BEEN MET WITH PRAISE FROM THE AUTHORITIES. PARTICULARLY THE USE OF GASOLINE TUNNELS CREATED QUITE A STIR, BUT THEY WERE VERY ADAMANT. AND THEY TOLD US, "IF YOU USE IT WE WILL LOCK YOU UP AND LOCK THE NEXT GUY UP."

MR. MC FARLAND: I DON'T FOLLOW YOU -- GASOLINE?

MR. THOMPSON: YES. THERE WAS QUITE A BIT OF ACTIVITY THROUGH OUR TRUCK AND STRUCTURES DEPARTMENTS USING GASOLINE-POWERED EQUIPMENT AND TOOLS INSIDE THE TUNNELS FOR MAINTENANCE

ACTIVITIES. AND ONCE THE FIRE OFFICIALS HEARD OF THIS, THEY MORE OR LESS REACTED TO US VERY STRONGLY AND WANTED TO KNOW WHO, WHAT, WHEN, WHY AND ET CETERA.

MR. MC FARLAND: IT WOULDN'T BE ALLOWED DURING CONSTRUCTION?

MR. THOMPSON: IT IS NOT ALLOWED "PERIOD" BEYOND ANY STRETCH OF IMAGINATION. AND ONCE THEY FOUND OUT ABOUT THIS THEY REACTED STRONGLY. AND THAT WAS NOT MET WITH A LOT OF PRAISE FROM THE AUTHORITIES, LIKE I SAID. THEY WEREN'T TO CONTINUE TO DO THIS IN CERTAIN CIRCLES, AND CONSEQUENTLY, YOU KNOW, THAT WAS ONE OF THE FIRMER ISSUES THEY PLANTED ON OUR DOORSTEP.

MR. MC FARLAND: THAT IS INTRIGUING.

MR. THOMPSON: AS I SAID, THEY WERE VERY ADAMANT.

MR. WEULE: YOU WILL FIND THAT IN CALIFORNIA FOR YOUR OPERATIONAL AREAS THAT THE MINES AND TUNNELS REALLY DON'T COVER THE USE OF IT. THEY CERTAINLY ARE NOT ENAMORED WITH THE USE OF GASOLINE OR PROPANE IN UNDERGROUND AREAS, BUT YOU ARE GOING TO FIND IN YOUR REAL WORLD THAT SMALL REQUIRED TOOLS ARE MADE WITH SMALL GASOLINE ENGINES.

WE HAVE TALKED TO MINE AND TUNNEL FOLKS IN THE BAY AREA. WE DON'T USE LARGE EQUIPMENT, GASOLINE-POWERED ALL RAIL EQUIPMENT FOR DETAILED USE UNDERGROUND. AND SO WE HAVE COME TO A REQUIRED AGREEMENT. BUT I THINK IT IS SOMETHING THAT HAS TO BE FACED RIGHT OUT FRONT SO THAT YOUR FIRE SERVICES AND MINES AND TUNNELS UNDERSTAND WHAT IS HAPPENING.

MR. MC FARLAND: THEIR JURISDICTION WOULD ONLY BE DURING

CONSTRUCTION?

MR. WEULE: WELL, THAT IS WHERE IT IS CLEAR.

MR. MC FARLAND: IN OPERATIONS?

MR. WEULE: THERE IS A LOT OF ROOM FOR INTERPRETATION.

MR. DONATO: WHEN WE OPENED THE SUBWAY IN THE MID '60'S, WE HAD SOME GANG CARS POWERED WITH GASOLINE, AND WE USED THAT FOR SEVERAL YEARS UNTIL THE FIREMEN TOLD US THAT THIS WAS NOT PROPER EQUIPMENT TO HAVE AND ALSO THE INSPECTOR FROM THE PROVINCE. SO WE CONVERTED THEM TO PROPANE. AND THEN THIS WENT ALONG FOR A FEW YEARS, AND AFTERWARD THEY TOLD US THAT PROPANE WAS NOT PROPER EQUIPMENT. SO WE ARE SCRAPPING THEM GRADUALLY. WE ARE USING DIESEL. WE DON'T KNOW IF THEY ARE GOING TO TELL US TO GET RID OF DIESEL. WE HAVE DIESEL WITH CATALYTIC SCRUBBERS.

MR. WEULE: CATALYTIC SEEMS TO BE IN AND WATER SCRUBBERS SEEM TO BE OUT.

MR. DONATO: WE HAVE THIS QUESTION OF STORING UNDERGROUND PROPANE. WE HAVE DISCUSSED THAT WITH FRENCH AUTHORITIES AND WE HAVE -- I DON'T KNOW IF IT IS A WRITTEN AGREEMENT -- BUT WE HAVE AN AGREEMENT FOR VERY SMALL QUANTITIES, EXPLAINING THAT THEY ARE IN THE AREA SHORT OF WELL VENTILATED. BUT GRADUALLY WE ARE TRYING TO GET RID OF ALL PROPANE.

MR. THOMPSON: WITH USE OF GASOLINE, ONE OF THE MAIN THINGS THAT THEY WERE OPPOSED TO WAS THE USE OF THE EQUIPMENT IN REGARD TO REFUELING IT IN THE TUNNELS. THEY KNEW IT DIDN'T POSE AS MUCH AS A HAZARD AS THE REFUELING OPERATION DID, AND THEY USED THE BROAD POWERS THAT ARE GIVEN

THE FIRE CHIEF TO DISCHARGE ANY OF THE GENERALLY UNSAFE CONDITIONS.

IN OTHER WORDS, IT IS NOT SPECIFICALLY PROHIBITED BY THE CODES, JUST ANYTHING UNSAFE BY THE FIRE CHIEF SHALL BE PROHIBITED. AND USING THAT VERY BROAD INTERPRETATION, THEY PUT A STOP TO IT. I THINK IT ALL CAME TO A HEAD WHEN THEY LEARNED THAT WE HAD BROUGHT IN A SWEDISH RAIL CAR THAT HAD A HUNDRED-GALLON TANK ON BOARD. AND THAT HAS NEVER GONE INTO THE TUNNEL YET EITHER. IT WAS A RAIL EXAMINATION VEHICLE.

MR. LOCK: I HAD A COMMENT TO MAKE CONCERNING SECURITY AGREEMENTS, AND OUR EXPERIENCE WAS WITH LOCAL POLICE JURISDICTIONS. IT TOOK A GREAT DEAL OF TIME TO ARRIVE AT A MASTER AGREEMENT INSOFAR AS OUR SECURITY FORCES WERE CONCERNED WITH RESPECT TO ARREST AND DETENTION AND WHO DID WHAT. AND THAT WAS MORE OF A PROBLEM THAN FIRE SERVICE WAS. WE REALLY DIDN'T HAVE A FORMAL AGREEMENT INSOFAR AS FIRE SERVICE WAS CONCERNED. THE LOCAL JURISDICTIONS SAID "WE ARE GOING TO SERVICE YOU IF YOU ARE IN OUR JURISDICTION." AND WE HAVE AGREEMENTS BETWEEN OURSELVES AND TO WHO HAS RESPONSIBILITY AND WHO BACKS UP WHO. AND SO YOU DON'T HAVE TO WORRY ABOUT THAT. BUT INSOFAR AS SECURITY WAS CONCERNED, IT WAS A TOTALLY DIFFERENT STORY. AND THE ONE DIFFICULTY THAT WE ENCOUNTERED WAS WITH RESPECT TO THE CORONER'S OFFICE INSOFAR AS SECURITY IS CONCERNED.

WE HAD HEARD THE EXPERIENCES OF OLDER PROPERTIES LIKE NEW YORK CITY AND LIKE CHICAGO WHO HAD FREQUENT SUICIDES AND THE PROBLEMS THAT THE DEATH POSED INSOFAR AS OPERATIONS WERE CONCERNED. AND IN GEORGIA IT WAS REQUIRED

THAT A CORONER BE ON SITE AND CERTIFY THAT THE INDIVIDUAL IS DECEASED BEFORE HE CAN BE MOVED, OTHERWISE OPERATIONS MUST BE DOWN. AND AS A CONSEQUENCE, OUR SECURITY OFFICERS -- WE ARRIVED AT AN AGREEMENT WITH THE CORONER'S OFFICE WHERE THEY WOULD BE TRAINED FROM THE CORONER AND THEY WOULD BE DEPUTIES OR ASSISTANT CORONERS AND THEY COULD THEN UNDERTAKE THIS RESPONSIBILITY. AND AS A CONSEQUENCE, THE SYSTEM WOULD NOT REMAIN STAGNANT FOR AN EXTENDED PERIOD OF TIME LOOKING FOR A CORONER.

MR. WEULE: IT IS INTERESTING. BART WENT THROUGH MUCH THE SAME THING. IT WAS ASSUMED IN THE INITIAL PLANNING THAT THE LOCAL POLICE JURISDICTIONS WOULD HANDLE POLICE MATTERS ON BART, AND BART WOULD HAVE A REGULARLY SMALL FORCE. AS IT CAME CLOSE TO REVENUE SERVICE AND IT GOT ADDRESSED HEAD-ON WITH THE LOCAL AUTHORITIES, THE PICTURE BECAME QUITE RADICAL BECAUSE THEY WERE NOT INTERESTED IN TAKING ONE IOTA OF RESPONSIBILITY.

BART HAS A FULL LAW ENFORCEMENT AGENCY WITH FULL POLICE POWERS IN THE STATE. I THINK IT IS UP TO 135 OFFICERS.

MR. MC FARLAND: AL, DOES MARTA HAVE ITS OWN POLICE?

MR. LOCK: MARTA HAS HIS OWN POLICE. THE SIZE OF THE POLICE FORCE I DON'T RECOLLECT. I THINK IT IS LESS THAN HALF THE SIZE OF YOURS, RALPH. WE HAVE ARREST AND DETENTION POWERS. HOWEVER, INSOFAR AS FORMAL ARREST IS CONCERNED, WE MUST TAKE THE INDIVIDUAL DOWN TO THE LOCAL POLICE STATION WHERE HE IS FORMALLY CHARGED.

MR. WEULE: THE ONLY THING THAT BART DOESN'T MAINTAIN IS FULL JAIL FACILITIES. WE HAVE BOOKING AND DETENTION.

WE ALSO HAVE THE CORONER PROBLEM. OBVIOUSLY YOU ARE NOT QUALIFIED TO DETERMINE IF HE IS DEAD. EVEN IF HE IS IN PIECES HE GOES TO THE HOSPITAL, WHICH IS HARDLY APPROPRIATE. SO WE WERE ABLE TO WORK OUT WITH EACH ONE OF THE COUNTY JURISDICTIONS THE ABILITY TO MOVE THE BODY FROM THE TRACK TO ANOTHER LOCATION UNTIL THE CORONER COULD ARRIVE, BECAUSE THEY ARE NOT AN IMMEDIATE-RESPONSE AGENCY.

MR. MC FARLAND: WE ARE NOT PRIMARILY DISCUSSING SECURITY OR SAFETY, BUT I WOULD APPRECIATE IT, IF YOU HAVE ANY DRAFT AGREEMENTS, LOOK AT THE FORM. BUT BOTH FOR THE FIRE COMMITTEES AND THE FIRE MARSHAL COMMITTEES OR YOUR SECURITY AGREEMENTS, THEY WOULD BE SOME INTERESTING GUIDELINES, I THINK.

MR. DONATO: WE HAD A VERBAL AGREEMENT WITH THE POLICE BEFORE WE OPENED REVENUE OPERATIONS AS TO WHO WOULD BE ALLOWED IN SECURITY TO REMOVE THE BODY. AND THIS IS WHAT WE ARE DOING AT THIS TIME. AND WE HAVE EACH STATION EQUIPPED TO TAKE THE BODIES AND WRAP THEM UP. AND THIS IS DONE BY OUR OWN MAN. THE POLICE COME AFTER THAT. THE CORONER COMES TO PICK THEM UP. IT IS IMPORTANT TO ADDRESS THIS QUESTION BEFORE STARTING OPERATION.

MR. MC FARLAND: I DON'T KNOW HOW WE GOT ON THIS CORONER BUSINESS, BUT IT IS VERY MUCH AN ISSUE.

MR. DONATO: YOU HAVE GOT TO DECIDE WHO IS GOING TO PICK UP THE PIECES, HOW THEY ARE GOING TO HANDLE THEM.

MR. MC FARLAND: WE WILL LEAVE IT TO THE ARCHITECTS.

MR. FARRELLY: ONE OF THE QUESTIONS THAT WERE RAISED AND WERE ADVISED BY THE TRANSPORTATION TO HAVE INVOLVED WAS HOW MANY

BODY BAGS WE HAD TO HAVE. WE HAVE REFRIGERATION CAPABILITY FOR CORPSES AND A FEW OTHER THINGS. THIS CAN GO ON AND ON TO SOME DEPTHS.

MR. THOMPSON: WE HAVE A 200-MAN POLICE FORCE GROWING. IT HAS JURSIDICTIONAL COMPLETE POWERS ON THE PROPERTY THERE NOT EMPOWERED IN MARYLAND, D.C., OR VIRGINIA OFF THE PROPERTY OR OFF DUTY. THEY DO OPERATE IN THE TRIJURISDICTIONAL AREA WHICH IS SIMILAR TO PATH, BUT THEY HAVE STATEWIDE AUTHORITY.

I BELIEVE IN THE EVENT, IF THERE IS A FATALITY, THE HOMICIDE AGENCIES OF THE LOCAL JURISDICTIONS ASSUME SOME RESPONSIBILITY IN THAT PARTICULAR AREA. AS FAR AS CORONERS ARE CONCERNED, I HAVE NO IDEA.

MR. FARRELLY: ONE THING ABOUT THE PATH POLICE, BECAUSE THEY ARE PART REALLY OF THE PORT AUTHORITY POLICE FORCE AND MAY BE SUBSEQUENTLY ASSIGNED TO PAIR UP AT PORTS AND WHAT HAVE YOU, THEY HAVE ALSO BEEN TRAINED AS FIRE FIGHTERS BECAUSE THEY COULD BE THE FIRST TO RESPOND. SO WHEN THEY ARE ASSIGNED TO PATH, THEY HAVE THE CAPABILITY. BUT, AGAIN, IN TERMS OF RESPONSE, IT WOULD BE THE MUNICIPAL FIRE DEPARTMENT WHO WOULD BE RETAINED TO RESPOND TO A PARTICULAR FIRE INCIDENT.

MR. MC FARLAND: I HAVE AN ITEM OF DISCUSSION HERE. THE FUNCTIONS REQUIRE CENTRAL DURING FIRE EMERGENCY. I WOULD LIKE TO GO BACK TO MR. LOCK'S COMMENT THAT REACTED TO YOUR THINKING WITHIN MARTA OF THE NEED OF CENTRAL CONTROL. I WISH YOU WOULD PICK UP ON THAT AGAIN.

MR. LOCK: WE HAVE, AS YOU REMARKED EARLIER, QUITE A DIVERSE OPINION THROUGHOUT THE AUTHORITY WITH RESPECT TO THE

NEED FOR A CENTRAL CONTROL. WE DO HAVE A CENTRAL CONTROL FACILITY? IT'S VERY SIMILAR TO THE DESIGN OF OTHER CENTRAL CONTROL FACILITIES. IT PERFORMS AND TRAINS SUPERVISION FUNCTIONS. IT PERFORMS AN ELECTRIFICATION CONTROL FUNCTION. IT PERFORMS AN OVERALL SUPERVISORY FUNCTION FOR THE SYSTEM, AND IT IS THE CENTRAL AREA FOR COMMUNICATIONS.

BUT INSOFAR AS THE OPERATION OF THE SYSTEM IS CONCERNED, WE DO NOT HAVE AN AUTOMATED LINE SUPERVISION FUNCTION PERFORMED BY TRAIN CONTROL. IT IS NOT VITAL TO THE SAFETY OF THE SYSTEM. THE TRAIN CONTROL STANDPOINT WE CAN'T OPERATE. WE CAN OPERATE REVENUE SERVICE WITH CENTRAL BEING DOWN AND REMAINING SAFE. IN A SIMILAR SENSE, WITH RESPECT TO ELECTRIFICATION, WE CAN EXERCISE CIRCUIT BREAKER AT THE SUBSTATIONS MANUALLY WITHOUT HAVING THE ACCESS TO THE REMOTE FACILITY THAT CENTRAL CONTROL PROVIDES. THIS IS ALSO TRUE WITH RESPECT TO COMMUNICATIONS. THEORETICALLY, AT LEAST, IT IS POSSIBLE TO CONSIDER THAT OUR SYSTEM CAN OPERATE WITHOUT A CENTRAL CONTROL. PRACTICALLY SPEAKING, HOWEVER, WE HAVE NEVER REALLY SERIOUSLY ENTERTAINED THIS POSSIBILITY, BECAUSE SIMILAR TO THE FIRE DEPARTMENT'S DESIRE FOR A COMMAND POST WHEN THEY ARE HANDLING AN EMERGENCY, THE AUTHORITY WANTS A COMMAND POST INSOFAR AS ITS DAILY OPERATIONS ARE CONCERNED. AND IN OUR CENTRAL CONTROL FACILITIES, FOR EXAMPLE, WITH RESPECT TO, YOU KNOW, UTILITY POWER FOR KEEPING IT OPERATIONAL, WE HAVE DUAL FEEDERS FROM DIFFERENT SUBSTATIONS SUPPLYING US WITH POWER. WE HAVE ALL THE EQUIPMENT IN CENTRAL THAT IS PROTECTED BY A LIAISON SYSTEM WHICH ABOUT EVERYONE ELSE DOES.

WE ALSO HAVE A STANDBY DIESEL GENERATOR IN CASE WE WOULD LOSE ALL UTILITY POWER. WE HAVE AN UP SYSTEM THAT COMES ON LINE FIRST AND THEN THE STANDBY DIESEL GENERATOR WILL TAKE OVER. AND SO WE ARE VERY CAREFUL ABOUT THE OPERATION OF CENTRAL CONTROL. BUT, NEVERTHELESS, AS I SAID EARLIER, IT IS NOT ESSENTIAL TO SYSTEM OPERATIONS.

MR. RHINE: IT IS ESSENTIAL BECAUSE THE REALITY OF IT IS THAT EVERYTHING ELSE IS BACKED UP TO CENTRAL IN THE EVENT THAT YOUR ABILITY TO OVERSEE AND SUPERVISE THE SYSTEM BREAKS DOWN. YOU COULD NOT BEGIN TO DO THE AMOUNT OF COMMUNICATION NECESSARY FOR BART IN CONTROL ROOMS IF CENTRAL WAS WITHOUT SOME MANNER, YOU WOULD HAVE 26 PEOPLE IN EACH OF THE ROOMS. FIRST OF ALL, YOU HAVE TO KNOW THAT YOU HAVE TO GET THEM OUT. IF YOU WERE OUT AT CENTRAL, YOU WOULDN'T KNOW AND ESSENTIALLY YOU HAVE TO GET THEM THERE AND TAKE OVER LOCAL CONTROL. AND CERTAINLY IN VARIOUS CASES YOU WOULD HAVE TO MAKE DECISIONS EVEN THOUGH THE ROUTING IS AUTOMATIC AND THE TRAIN LOST IT'S I.D. THERE IS AN INTERSECTION IN EACH OF THESE. CENTRAL IS THE PRIMARY CONTROL OF THE SYSTEM. IF YOU DIDN'T HAVE CENTRAL, YOU WOULD HAVE SOMETHING CALLED "COMMUNICATION CENTRAL." IN A FAR-REACHING SENSE, IT IS LIKE NEW YORK CITY WITH ALL ITS LITTLE WATCHTOWERS AND PEOPLE THROWING MECHANICAL LEVERS AND SWITCHES. THEY HAVE A CHART WHEN TRAINS ARE GOING TO COME AND GO ALL DAY LONG. IF ANYTHING HAPPENS ANYWHERE IN THE SYSTEM THEY HAVE LITTLE IDEA OF WHAT HAPPENED; WHAT TO DO ABOUT IT; AND YOU SIMPLY COULD NOT RUN A SYSTEM -- I GUESS WITH BART'S EMERGING SYSTEM -- WITHOUT SOMETHING THAT IS CENTRALIZED, A LOT OF INFORMATION.

I DON'T THINK ANYONE WOULD HAVE A SYSTEM OPERATE THAT WAY. YOU COULD DO WITHOUT THE LOCAL CONTROL BEFORE YOU COULD DO WITHOUT THE CENTRAL CONTROL.

MR. WEULE: ESSENTIALLY, I WAS GOING TO FILL IN WHAT RHINE JUST ELABORATED AND WHAT IS THEORETICALLY POSSIBLE AND TO ASSURE PROTECTION, I.E., REAREND PROTECTION BY THE LOCAL CONTROL FUNCTIONS. BUT THERE ARE SO MUCH OTHER THINGS THAT ARE CRITICAL TO THE OPERATION THAT THAT IS ALMOST IMPOSSIBLE. WE DO HAVE BACKUP SHOULD WE LOSE CENTRAL CONTROL FOR DISPATCHING PERSONNEL WITH COMMUNICATION TO THE VARIOUS LOCATIONS, BUT IT IS JUST A TREMENDOUS UNDERTAKING. IT IS POSSIBLE, BUT YOU ARE GOING TO DEGRADE THAT SYSTEM OPERATION.

MR. LOCK: LET ME MAKE A COMMENT INSOFAR AS OUR SYSTEM DESIGN IS CONCERNED WITH RESPECT TO TRAIN CONTROL. I APPRECIATE YOUR COMMENT WITH RESPECT TO BART AND ITS DESIGN CONCEPT. AT MARTA THE TRAIN PERFORMS THE FUNCTION OF AUTOMATIC TRAIN PROTECTION. WE DID NOT REQUIRE CENTRAL CONTROL FOR THAT FUNCTION. WE DO NOT REQUIRE CENTRAL FOR AUTOMATIC TRAIN OPERATION. WE NEED CENTRAL ONLY FOR LINE SUPERVISION. AND LINE SUPERVISION REALLY IS NOT SAFETY CRITICAL ON OUR SYSTEM. IT IS NOT THE SAFETY CRITICAL FUNCTION, ALTHOUGH, WE DO REQUIRE LOCAL CONTROL. IF WE LOSE LOCAL CONTROL AT A TRAIN CONTROL ROOM, THAT SEGMENT OF THE SYSTEM THEN IS DOWN, AND WE HAVE TO OPERATE ROAD MANUAL THROUGH THAT SECTION.

MR. RHINE: BART AND MARTA ARE ALL THE SAME PRINCIPLE. THEY ALL WORK THE SAME WAY WITH DIFFERENT ELECTRONIC ACTION. IN A DISTRIBUTED CONTROL SYSTEM YOU HAVE ZONES OF CONTROL.

BUT WHAT I WAS GOING TO SAY WAS YOU COULDN'T TAKE OUT ONE SECTION AND RUN A MANUAL THROUGH THAT SECTION BECAUSE YOU ARE SWITCHING AND YOU ARE ROUTING AND EVERYTHING IS AUTOMATICALLY CONTROLLED, AS IS TRAIN PROTECTION AND SPEED CONTROL.

WHAT I AM SAYING IS FOR YOU TO DO AWAY WITH IT BECAUSE I DON'T THINK IT IS GOING IN THERE. BUT EACH OF THE 26 TRAIN CONTROL RULES ACTUALLY CARRIES OUT TRAIN PROTECTION AND AUTOMATIC TRAIN CONTROL FUNCTIONS. BUT THERE ARE A LOT OF SIGNALS TO CENTRAL ABOUT OTHER THINGS OF OPERATIONS. THERE IS NO WAY IN THE WORLD YOU CAN KEEP TWO SYSTEMS RUNNING SMOOTHLY WITHOUT ANY DISRUPTION WITHOUT A TRAIN CONTROL SYSTEM.

MR. MC FARLAND: NOW, WE ARE TALKING FIRE EMERGENCY. I THINK THIS BECOMES EVEN MORE PARAMOUNT.

MR. THOMPSON: WE OPERATED FOR A PERIOD OF APPROXIMATELY TEN DAYS BLIND FROM CENTRAL CONTROL. THE COMPUTERS WERE DOWN AND THE SCREENS WERE BLANK. WE MADE SEVERAL CONTINGENCY PLANS WHICH INCLUDED DISTRIBUTION TIME. WE WORKED UP A SPECIAL PROCEDURE SPECIFICALLY FOR FIRE DEPARTMENT OPERATION IN CONJUNCTION WITH FAN SHAFT OPERATIONS WHICH WE HAD LOST. THERE IS NO REMOTE CONTROL TO THESE FACILITIES OR ANYTHING LIKE THIS FOR THAT PERIOD OF TIME. WE DID NOT HAVE ANY INCIDENT DURING THIS PERIOD OF TIME, BUT WE HAD TO DEVELOP A CONTINGENCY PLAN BASED UPON THE FACT THAT WE WOULD BE RUNNING BLIND FOR SOME PERIOD OF TIME. AND IT WENT WITHOUT INCIDENT.

MR. DONATO: WE CAN BREAK WITHOUT CENTRAL CONTROL.

CORRECT ME IF I AM WRONG, BUT I THINK MONTANA HAS BEEN THE FIRST SUBWAY WITHOUT CENTRAL CONTROL AND EVEN IN EUROPE THAT DIDN'T HAVE CENTRAL CONTROL. IT WOULD BE DIFFICULT NOW TO THINK TO OPEN WITHOUT CENTRAL CONTROL. WE HAVE IN OUR SYSTEM LOCAL CONTROL SO IF ACTUALLY THE OPERATION SIDE OF CENTRAL WOULD GO BLANK COMPLETELY THEY COULD OPERATE WITH LOCAL CONTROL. IF EVER WE LOSE THE POWER OF CENTRAL CONTROL IT IS VERY, VERY DIFFICULT TO OPERATE BECAUSE EVERYTHING IS THERE, ALL THE OTHER POWER STATIONS, FIELDING LINES, A WHOLE SATELLITE. THIS IS WHERE ALL THE SWITCHES ARE, AND YOU ALLOW, IF YOU USE POWER TO FEELER, YOU CHANGE FEELER AND THINGS LIKE THAT. IT IS ALL DONE AT CENTRAL CONTROL. YOU COULD, I AM SURE, OPERATE, BUT YOU WILL HAVE A LOT OF PROBLEMS IF YOU DON'T USE CENTRAL CONTROL.

BUT ONE THING I WOULD LIKE TO ADD IS, I THINK WE HAVE A TENDENCY TO CONCENTRATE TOO MANY THINGS OUT OF CENTRAL CONTROL, ESPECIALLY WHEN YOU TALK ABOUT FIRE DEFENSE. I THINK THEY ARE GOOD AT THE BEGINNING, YOU KNOW, TO RELAY THE INFORMATION, TO CALL THE FIREMEN TO SEND PEOPLE TO THE SITE, BUT THEY DON'T SEE VERY WELL WHAT IS HAPPENING THERE. THE INFORMATION THEY GET IS INFORMATION THEY GET THROUGH OUR INDIVIDUALS, AND THEY PASS THROUGH DIFFERENT PEOPLE. AND WHEN IT GETS TO THEM IT IS NOT VERY, VERY CORRECT.

WHAT WE HAVE IN THE VICINITY -- WE HAVE THE CHIEF OF INCIDENT. HE IS A TRANSPORTATION MAN. AND HE IS ON THE SITE. HE HAS A RADIO. WE GIVE HIM ALSO COMMUNICATION IF WE LOSE THE TELEPHONE. WE GIVE HIM REPORTS AND COMMUNICATIONS WE BRING TO THEM. AND HE CAN COMMUNICATE

WITH CENTRAL CONTROL. HE CAN COMMUNICATE WITH THE FIREMAN. AS SOON AS THE FIREMEN GET THERE, THEY TAKE OVER AND HE IS THERE TO HELP THE FIREMAN. CENTRAL CONTROL CAN'T BE OF MUCH HELP THEN BECAUSE THEY DON'T HAVE ANY EYES ON THE SITE.

MR. MC FARLAND: THE PREPARED RESPONSIBILITY, OF COURSE, IS ONCE THE FIRE DEPARTMENT IS ON THE SCENE IS TO TAKE CHARGE OF THE FIRE. THE HOME OF CENTRAL BECOMES ONE OF SECONDARY IN SUPPORT.

MR. DONATO: BECAUSE THEY ARE FAR FROM THE INCIDENT. THEY DON'T KNOW EXACTLY WHAT IS HAPPENING THERE, AND THIS HAS HAPPENED TO ME SEVERAL TIMES, YOU KNOW, WHERE I GET A CALL AT NIGHT OR DURING THE DAY AND CENTRAL CALLS AND THEY CALL ME IF THERE IS ANY PROBLEM WITH FIRES. AND I SAY, "AFTER ALL, WE HAVE A SMALL EMISSION OF SMOKE AT THAT STATION." AND WHAT I ASK IS, "HAVE THE FIREMEN BEEN CALLED?"

HE SAID, "YES." I SAY, "DOES IT LOOK WORSE?"

THEY SAY, "NO."

AND I TAKE MY CAR AND I GO THERE. THEY DON'T KNOW. THEY DON'T KNOW HOW IMPORTANT IT IS. YOU HAVE TO GO THERE AND USUALLY LEARN MORE THINGS WHILE THERE.

MR. MC FARLAND: IF THEY SAY, "YES," YOU DON'T TAKE YOUR TIME.

MR. DONATO: THEY SHOULD HAVE A MINIMUM CLOSE CIRCUIT TV. THEY NEED CLOSE CIRCUIT TV THAT LOOKS AT TWO PLATFORMS. IT IS SOMETHING THEY SHOULD HAVE BECAUSE THEY GET MESSAGES OF THINGS THAT GO WRONG IN THE STATION AND THEY DON'T SEE IT. AND PEOPLE DON'T ALWAYS USE THE RIGHT WORDS WHEN THEY SPEAK.

MR. MC FARLAND: IS THIS CENTRAL NOW?

MR. DONATO: CENTRAL RECEIVES INFORMATION FROM A STATION AS TO IF SOMETHING IS WRONG WITH THE TRAIN. DEPENDING UPON THE MAN WHO CALLED, IT COULD BE IMPORTANT OR NOT IMPORTANT. HE COULD SAY IT IS NOT IMPORTANT. IT COULD BE VERY IMPORTANT. THERE COULD BE A LOT OF SMOKE COMING FROM THE TRAIN, AND HE COULD SAY IT IS JUST A LITTLE BIT OF SMOKE. I THINK IT IS IMPORTANT THAT YOU WOULD SEE THE PLATFORM. MANY SUBWAYS HAVE IT. I DON'T KNOW IF YOU HAVE TO HAVE IT TO HAVE CLOSE CIRCUIT TV TO SEE THE PLATFORMS.

MR. WEULE: THAT BECAME A VERY HOT POLITICAL ISSUE INCLUDING UNION INVOLVEMENT, SO WE ARE NO LONGER USING THOSE. ALTHOUGH WE DO HAVE SOME INSTALLATION STILL IN PLACE.

MR. SALYER: THE FIRE DEPARTMENT WOULD LIKE TO HAVE SOMEBODY THAT KNOWS THE SYSTEM ON THE SCENE TO ASSIST THE INCIDENT COMMANDER THROUGHOUT THE EMERGENCY. AND OUR FIRE DEPARTMENT WOULD ALSO LIKE TO ENCOURAGE -- WE GET A CALL ON ANYTHING THAT HAPPENS, ANYTHING THAT APPEARS TO BE A FIRE. EVEN IF THEY ARE NOT SURE IT IS A FIRE, WE WANT TO BE CALLED ON IT. WE WOULD RATHER COME AND BE TURNED BACK WITHOUT NOTHING THAN BE DELAYED AND HAVE SOMETHING BUILD UP BEFORE WE GET THERE.

MR. THOMPSON: THIS IS A CONTINUING PROBLEM WITH WMATA. THE CONTROL STAFF IN MANY INSTANCES WILL RESPOND TO A FIRE ALARM IN LESS THAN APPROPRIATE MANNER IN THAT THEY WILL MAKE A DETERMINATION THAT "WELL, WE DON'T NEED TO CALL THE FIRE DEPARTMENT ON THIS." AND UNDER NORMAL CIRCUMSTANCES THEY WILL CALL THE FIRE DEPARTMENT IN. THERE REALLY ISN'T A PATTERN IN IT EXCEPT IT APPEARS TO AN INDIVIDUAL'S CONSIDERED

OPINION AT THAT TIME.

AS I WAS LEAVING TO COME OUT HERE I KNOW THERE WAS A MEMORANDUM GOING TO CENTRAL CONTROL ADVISING THEM THAT THERE WAS A LEGAL REQUIREMENT WHICH HAS BEEN BROUGHT TO THEIR ATTENTION MANY TIMES BEFORE THAT ALL FIRES HAD TO BE REPORTED TO THE FIRE DEPARTMENT AND THAT AT THE SAME TIME WE WERE ATTEMPTING TO NEGOTIATE THROUGH THE LIAISON OFFICER'S COMMITTEE A REDUCED RESPONSE FOR THOSE TYPES OF INCIDENTS WHICH WERE CLEARLY NOT A FIRE BUT WERE WARNED IN SOME INVESTIGATION BY THE FIRE DEPARTMENT. I DON'T KNOW WHERE IT IS HEADING RIGHT NOW PRESENTLY BECAUSE OUR RESPONSES TO THE METRO STATION ARE BOX ALARM ORDER, WHICH IS A VERY SIGNIFICANT RESPONSE BY THE FIRE DEPARTMENT. SO THAT IS A CONTINUING PROBLEM. AND IT GOES RIGHT DOWN TO THE TRAINING THAT THE PEOPLE IN CENTRAL CONTROL HAVE OR DON'T HAVE, IN THIS CASE, AS FAR AS HOW TO DETERMINE WHAT IS AN EMERGENCY AND WHAT IS NOT.

WE FURNISHED TO THE LIAISON OFFICER'S COMMITTEE COPIES OF ALL REPORTS WHICH REFLECT ON FIRE, AND THEY TURNED AROUND TO USE THIS AS AMMUNITION TO FUEL THIS INCIDENT TO BRING IT TO HEAD. AND I SUPPOSE THAT IT WILL RESULT IN THE ADOPTION OF A LIMITED RESPONSE FOR SMOKE IN THE STATION VERSUS AN ACTUAL CAR FIRE OR SOMETHING ALONG THAT LINE FOR INVESTIGATION PURPOSES. BUT PRIMARILY THIS WHOLE THING IS BEING BROUGHT UP SO THAT CENTRAL CONTROL WORKS CLOSELY WITH THE FIRE DEPARTMENT AND CALLS UPON THEIR SERVICES EACH TIME. I THINK WHAT THEY ARE REACTING TO IS THAT, WHEN THE FIRE DEPARTMENT COMES TO THE SCENE, THEY GENERALLY INTERRUPT

REVENUE SERVICE FOR ONE REASON OR ANOTHER OR THEY HAVE TO HOLD A TRAIN THERE FOR INVESTIGATIVE PURPOSES BY THE DEPARTMENT. AND THEY ARE REACTING TO THAT BECAUSE THEIR PRIMARY MISSION, AS THEY SEE IT, IS TO RUN THE RAIL RECORD AND NOT RUN AN EMERGENCY.

MR. SALYER: THIS CAN BE COMPARED WITH OUR HISTORY OF REPORTING HOTEL FIRES. WE HAVE A VERY BAD HISTORY OF HOTEL FIRES NOT BEING REPORTED IN THEIR INCIPIENCY WITH THE HOPE THAT THE MANAGER CAN PUT THE FIRE OUT AND NOT HAVE THE TENANT SEE TEN FIRE TRUCKS PULL IN FRONT, WHICH IS BAD FOR BUSINESS. AND WE DO PROSECUTE THEM WHEN IT CAN BE PROVEN THAT THEY HAVE DONE THIS. IT IS IN THE MUNICIPAL CODE THAT THEY ARE OBLIGATED TO REPORT THE FIRES. AND I WOULD SORT OF COMPARE THAT WITH THIS CASE.

MR. WEULE: AND THE PEER FROM THE TRANSIT AUTHORITY'S VIEW POINT IS WE HAVE A FULL RESPONSE. IT'S HARD FOR THE FIRE DEPARTMENT TO APPRECIATE "WAIT A MINUTE. HOLDING THAT TRAIN IS HOLDING 10,000 PEOPLE RIGHT BEHIND IT." AND I THINK WE ARE GETTING OVER THAT HUMP NOW SIMPLY BY A LOT OF HEAD-TO-HEAD WORK WITH THE FIRE DEPARTMENT AND BART TO ESTABLISH WHAT OUR REASONABLE RESPONSE LEVEL IS AND REASONABLE RESPONSE REPORT CRITERIA. WE HAVE ESTABLISHED THREE LEVELS OF RESPONSE. WE FEEL THAT THE FIRE DEPARTMENT SHOULD KNOW EVERYTHING THAT GOES ON IN REGARD TO, SAY, ANY SMOKE OR FIRE CONDITIONS. THERE WAS A FIRE IN THE TRASH CAN AND WE PUT IT OUT. AND IT IS LIKE, IF YOU WOULD LIKE TO COME OUT AND LOOK AT THE TRASH CAN, ALL RIGHT.

THE YELLOW ALERT IS THE SECOND LEVEL WHERE WE HAVE

A SMOKE CONDITION OR WHERE WE HAVE A BETTER KNOWLEDGE OF WHAT THAT SMOKE IS AND A LIMITED RESPONSE IS SENT.

AND THEN A RED ALERT IS WHERE WE HAVE A REPORT OF A PUBLIC FIRE. BUT YOU ARE GOING TO HAVE TO WORK VERY CLOSELY TOGETHER.

MR. SALYER: WHAT WOULD THAT BE UNDER, EMERGENCY OR NONEMERGENCY?

MR. WEULE: NONEMERGENCY. WE ARE STILL WORKING IT OUT. WE HAVE HAD IT IN THE LAST ABOUT NINE MONTHS NOW. BUT IT IS COMING TOGETHER. AND EACH TIME WE USE ONE OF THOSE, WE SHAKE IT OUT AND REVIEW THE TAPES BOTH ON OUR SIDE AND ON THEIR SIDE. WELL, YOU START HEAVY AND NOW YOU ARE BACKING OFF AFTER A FEW CLIPS OF EXPERIENCE, AS THAT IS PROBABLY HOW IT HAS TO BE.

IF THEY CAN OPENLY DISCUSS IT RATHER THAN TAKE THIS HARD-ROCK POSITION WHERE WE HAVE ONE SIDE AND "WE ARE NOT GOING TO TELL YOU ANYTHING BECAUSE YOU ARE GOING TO SCREW IT UP ON THE OTHER SIDE," YOU HAVE TO MAINTAIN OPEN LEVEL AND CONTINUE IT SO YOU CAN ADJUST IT WHERE THE RIGHT WAY IS.

MR. MC FARLAND: GENTLEMEN, IF YOU ALL WOULD LIKE A COLD DRINK . . .

(RECESS.)

MR. MC FARLAND: WE ARE IN THE VERY EARLY PHASES OF PRELIMINARY -- DOUG WOULD CALL IT CONCEPTUAL. THIS IS OUR FIRST REVIEW IN DISCUSSION OF FIRE SAFETY. I WOULD LIKE TO PUT ON THE TABLE THE QUESTION -- SEEK RECOMMENDATIONS ON WHAT SORT OF MEETINGS WOULD YOU RECOMMEND. WHAT SORT OF REVIEWS?

I WAS VERY MUCH INTRIGUED BY MR. LOCK'S COMMENTS YESTERDAY ON DESIGN ASSURANCE FOR FIRE SAFETY. IF YOU WOULD LIKE TO SPEAK ON THAT ISSUE, IT WOULD BE VERY INFORMATIVE.

MR. LOCK: I MADE THAT COMMENT YESTERDAY IN DESCRIBING OUR SYSTEM SAFETY PROGRAM AS IT WAS CONDUCTED DURING THE COURSE OF ENGINEERING. AND IN PARTICULAR, WITH REFERENCE TO CRITERIA, EVEN THOUGH YOU ARE IN WHAT DOUG LOW WOULD CALL CONCEPTUAL ENGINEERING, EVEN THOUGH YOU ARE STARTING ON YOUR DESIGNING OF FACILITIES AND STRUCTURES, IT WAS OUR EXPERIENCE TO TAKE -- WE TOOK -- LET ME PHRASE IT THAT WAY -- TO START IMMEDIATELY ON THE PREPARATION OF CRITERION. BECAUSE FOLLOWING CONCEPTUAL DESIGN, YOU WILL GET INTO PRELIMINARY DESIGN. YOU WILL THEN TURN THE WORK OVER TO A & E. THE WORK WILL COME BACK IN A PACKAGE. YOU HAVE TO HAVE A BASIS FOR THE REVIEW AND THE FINALIZATION OF IT. AND THIS BASIS IS YOUR CRITERIA. YOU THEN ALSO WILL BE IN THE PROCESS OF PREPARING PROCUREMENT SPECIFICATIONS. YOUR PROCUREMENT SPECIFICATIONS HAVE TO BE REVIEWED AND THEY HAVE TO BE CORRECTED PRIOR TO THE TIME THEY ARE ADVERTISED. THEN, AGAIN, YOU NEED YOUR CRITERIA AS A MEANS OF PERFORMING THIS FUNCTION. AND SO YOUR CRITERIA ARE ESSENTIAL INITIALLY.

WELL, YOU WILL DEVELOP GOALS AND OBJECTIVES FIRST AND FROM THIS YOU WILL HAVE CRITERIA. AND THEN YOU WILL EVOLVE SPECIFICATIONS AND YOU WILL PROCEED WITH THE DESIGN CONSTRUCTION OF YOUR SYSTEM. IN OUR CASE, INSOFAR AS I REPORTED YESTERDAY, WITH RESPECT TO OUR SYSTEM SAFETY PROGRAM, AFTER WE EVOLVED OUR CRITERIA, OUR MAJOR MILESTONE WAS THE DESIGN REVIEW FUNCTION WHERE WE REVIEWED DESIGNS FOR

PERFORMANCE TO CRITERIA FROM A SAFETY POINT OF VIEW, AND THEN WE PROVIDED FOR A PROVISION. AND THEN AS WE GOT INTO CONSTRUCTION, WE INSPECTED THE AS-BUILT CONFIGURATION FOR CONFORMANCE TO THE DESIGNS WHICH PREVIOUSLY HAD BEEN DESIGNED TO CONFORM TO THE CRITERIA. AND THE SAD FACT OF THE MATTER IS, YOU DO NOT CATCH EVERYTHING.

AS A CONSEQUENCE -- ... ESPECIALLY AT POINTS OF INTERFACES WHERE YOU REALLY RUN INTO TROUBLE AND WHEN YOU INSPECT AS-BUILT CONFIGURATIONS, YOU WILL FIND THAT STANDPIPES ARE UNCONNECTED. AND YOU WILL FIND ALL SORTS OF DISCREPANCIES WHICH YOU THINK SHOULD BE CAUGHT AND PROBABLY SHOULD HAVE BEEN CAUGHT. BUT FOR SOME REASON OR ANOTHER THEY WEREN'T. AND THIS PROCESS GIVES YOU BETTER ASSURANCE THAT YOU ARE GOING TO HAVE FEW OF THESE OR, HOPEFULLY, NONE. BUT THE TRUTH OF THE MATTER IS, YOU WILL ALWAYS HAVE SOME. BUT, YET, I AM AN ADVOCATE FOR THIS PROCESS BECAUSE WE FOLLOW IT, AND I THINK IT HAS MERIT.

MR. MC FARLAND: THANK YOU.

MR. THOMPSON: I THINK ONE OF THE BEST THINGS YOU CAN DO IS TO PLAY AN ACTIVE ROLE IN OBSERVING THE CONSTRUCTION EFFORTS THAT HAVE BEEN GOING ON. UNLIKE WMATA, WE HAVE LITTLE OPPORTUNITY OR JURISDICTION IN THE CONTRUCTION AREAS EXCEPT FOR THE PRESUBSTANTIAL INSPECTION AND THE OTHER SCI'S THAT ARE CONDUCTED. BUT BY THE TIME THE EQUIPMENT IS INSTALLED AND THE BUILDINGS ARE BUILT, THE PROBLEMS WILL COME OUT BEYOND YOUR CONTROL AND YOU MORE OR LESS END UP BUYING THE SITUATION AS IT IS.

MR. MC FARLAND: IN THE FIRST TWO YEARS IN THE

PRELIMINARY ENGINEERING PHASES THAT WE ARE FACING RIGHT NOW, FREQUENCY OF REVIEW AND FROM A SAFETY STANDPOINT, HOW WOULD YOU RECOMMEND REVIEWING THE PRELIMINARY DESIGN THAT WE WILL START IN THE SECOND YEAR FROM A SAFETY ASSURANCE STANDPOINT?

MR. LOCK: WELL, OUR EXPERIENCE, AS I INDICATED YESTERDAY, WAS THAT AT THIS POINT IN TIME WHEN YOU ARE IN PRELIMINARY DESIGN, WHEN YOU ARE CONCEPTUALIZING YOUR SYSTEM, THIS IS WHERE YOU ARE AT THE POINT WHERE YOUR DECISIONS ARE EXCEEDINGLY IMPORTANT WITH RESPECT TO CONFIGURATION BECAUSE THIS IS WHERE THE BIG BUCKS ARE SPENT. AND AS A CONSEQUENCE, WE REVISED THE PROCESS OF CONCEPTUAL DESIGN BECAUSE OF THE CONCERN ON THE PART OF OUR MANAGEMENT THAT THIS WORK COULD BE DONE IN A MORE COST-EFFICIENT MANNER THAN HAD BEEN DONE PREVIOUSLY. I WISH DOUG WAS HERE, BECAUSE WE COULD HAVE A GOOD DIALOGUE WITH RESPECT TO AESTHETICS AND PATRON COMFORT AND FINANCIAL COST. WHAT FINANCIAL LINE DO YOU DRAW?

AND AS A CONSEQUENCE, WE NOW HAVE DESIGN TEAMS FOR CONCEPTUAL DESIGN WHERE THEY ARE ASSIGNED A LINE SEGMENT RESPONSIBILITY. PUT IT THIS WAY, THE RAPID TRANSIT SYSTEM, TO MY WAY OF THINKING, IS, IN ITS DESIGN AND CONSTRUCTION, SOMEWHAT LIKE AN AVOCADO. YOU KNOW YOU HAVE THIS SYSTEM YOU ARE GOING TO DESIGN AND THEN YOU TEAR IT APART AND YOU HAVE ALL THESE LITTLE LEAVES AND THEN YOU PUT IT BACK TOGETHER AGAIN. AND TO MAINTAIN ADEQUATE COST CONTROLS AND TO MAINTAIN ADEQUATE TECHNICAL CONTROLS, YOU CAN'T COMPARTMENTIZE IT INTO INDIVIDUAL LINES AND EXPECT IT TO BE DONE EFFICIENTLY AND PROPERLY.

THE CONCEPT THAT WE ARE FOLLOWING AT THE PRESENT TIME -- WE ARE DESIGNING ON THE BASIS OF LINE SEGMENTS WHERE WE HAVE NOW GIVEN RESPONSIBILITY TO AN INDIVIDUAL THAT WE DESIGNATE AS A PROGRAM MANAGER FOR A LINE SEGMENT. AND THAT IS A CONVENIENT DIVISION OF SYSTEM -- A NUMBER OF LINE SECTIONS AND STATIONS THAT BECOME A PACKAGE. AND HE IS RESPONSIBLE FOR WORRYING ABOUT THE INTERFACES. HE IS RESPONSIBLE FOR -- HE IS ALMOST THE LAST AUTHORITY, ALMOST BUT NOT QUITE THE LAST AUTHORITY FOR SIGNING OFF ON CHANGE ORDERS, BECAUSE WE HAVE BEEN BITTEN QUITE SEVERELY INSOFAR AS CHANGE ORDERS ARE CONCERNED IN ESCALATING COSTS WITH RESPECT TO OUR STATIONS AND OUR LINE SECTIONS. AND THE SAFETY QUESTION ENTERS RIGHT AT THIS POINT AS WELL.

WHEN WE GET INTO GRADE CONSIDERATIONS, WHEN YOU GET INTO CROSSOVER, WHEN YOU GET INTO POCKET TRACKS, PLACES OF SAFE REFUGE, YOU SHOULD HAVE SAFETY INVOLVEMENT, FROM MY POINT OF VIEW, INITIALLY, BECAUSE THESE CONSIDERATIONS DEFINITELY IMPACT DESIGN AND CONSEQUENTLY THE IMPACT COST. AND THEY ARE A MAJOR CONCERN. SO I FEEL THAT YOU SHOULD HAVE A REVIEW PROCESS, WHICH NEED NOT BE AS FORMALIZED AS THIS INSOFAR AS MINUTES ARE CONCERNED, CERTAINLY, BUT THAT SAFETY SHOULD PARTICIPATE IN. AND YOU SHOULD HAVE A FORMAL SET OF CRITERIA AND FORMAL PROCESS INSOFAR AS REVIEW AND EVALUATIONS ARE CONCERNED.

MR. THOMPSON: JUST ONE OTHER THING IS, IF YOU BUY A SYSTEM, WHETHER IT BE FIRE ALARMS OR VENTILATION OR ANYTHING, BE SURE THAT YOU PURCHASE IT AND ACCEPT IT AS A SYSTEM AND NOT DO IT IN SEGMENTS, BECAUSE THAT HAS BEEN THE CRUX OF OUR PROBLEM,

BECAUSE WE HAVE ACCEPTED PIECES OF A PUZZLE AND WHEN WE GET THE WHOLE PICTURE WE FIND THAT IT IS NOT WHAT WE INTENDED OR WERE SUPPOSED TO HAVE.

MR. DONATO: WE HAVE A DIVISION CALLED FIRE PREVENTION. THEY ARE NOT RESPONSIBLE. THEY DON'T HAVE RESPONSIBILITY AS WIDE AS MARTA WOULD HAVE TO LOOK AFTER A LOT OF THINGS IN THE CONCEPTION AND ENGINEER. THEY ARE ONLY LOOKING AFTER FIRE FIGHTING EQUIPMENT. THAT IS ALL THEY DO. THE BALANCE, WE COULD SEE THE TECHNICAL COMPONENTS OF THE SUBWAY. AS FAR AS SAFETY IS CONCERNED, IT IS LOOKED AFTER BY THE THREE DEPARTMENTS. THE THREE DEPARTMENTS HAVE THE RESPONSIBILITY TO SET UP IN WRITING WHAT ARE THEIR CRITERION, IF YOU WANT, OR SAFETY TOUCHING THE DIFFERENT SYSTEMS LIKE VENTILATION OR PUMPING SYSTEM. THE CITY WANTS SO MANY PUMPS. THEY WANT DIFFERENT FEET. THEY WILL GIVE THEM THEIR CRITERIA.

NOW, THE CONSTRUCTION GROUP STARTS WITH THAT AND THEY DESIGN -- THEY PREPARE SPECIFIC DRAFTS. THESE DRAFTS ARE SENT BACK TO US. WE READ THEM. WE LOOK AT THEM. AND WE REPORT BACK IN WRITING WHAT WE LIKE AND WHAT WE DON'T LIKE. THEN WE MEET AGAIN ANOTHER TIME. THEY TAKE ALL THIS MODIFICATION. WE MEET WITH THEM AND WE ARE NOT ALLOWED TO CHANGE MAJOR THINGS, BUT WE CAN CHANGE SMALL THINGS.

AFTER ONCE WE AGREE, THEN THESE SPECIFICATIONS ARE SENT FOR PROCUREMENT. NOW, THE CONTRACTS ARE GIVEN. WE HAVE NO AUTHORITY TO CONTRACTORS. THERE IS, BUT OUR MAINTENANCE MEN ARE CLOSE TO THE STATION, ESPECIALLY WHEN THEY GET TO THE END PHASE. AND USUALLY THEY WORK WITH THE

CONTRACTOR. EVEN IF THIS IS NOT ALWAYS, THE CONTRACTOR DOESN'T MIND, BECAUSE IF WE'RE HELPING SOMEHOW. THIS WAY WE CAN LEARN THE SYSTEM BECAUSE IT IS ALWAYS DIFFICULT TO GET DRAWINGS, GET THE INFORMATION. MANUALS FOR MAINTENANCE, YOU GET THEM AFTER YOU START OPERATION BECAUSE THE DATE YOU START OPERATION HAS BEEN DECIDED THAT IT WILL BE A WEEK BEFORE THE ELECTIONS. AND IT IS NOT VERY MUCH YOU CAN DO ABOUT THAT. SO YOU HAVE TO SOMEHOW FIND A WAY TO GO AROUND ALL THESE PROBLEMS AND GET THE SYSTEM GOING.

MR. GRAINGER: HOW ABOUT THE AREAS OF REVIEWS OF THE FIRE DEPARTMENT?

MR. MC FARLAND: AREAS OF REVIEW WITH THE FIRE DEPARTMENT?

MR. GRAINGER: YES.

MR. MC FARLAND: I THINK THAT GETS TO THE QUESTION OF WHAT SORT OF ORGANIZATION THEY SET UP TO INTERFACE WITH THE FIRE DEPARTMENT IN VIEW OF SOME SORT OF FIRE MARSHAL COMMITTEE. THAT WOULD BE A NATURAL OUTPUT AS A MECHANISM FOR REVIEW BOTH TO THE AUTHORITY AND FROM THE AUTHORITY TO THE FIRE DEPARTMENT. BUT WITH PRIMARILY ONE JURISDICTION HERE -- WELL, TWO -- WE DON'T FACE THE SAME PROBLEM THE FIRST OTHERS HAVE FACED WITH MANY JURISDICTIONS WHERE YOU ARE FORCED TO GO TO SOME OVERSEEING GROUP.

MR. GRAINGER: BUT IT MAY BE THAT THE THINGS THAT LOCK TALKS ABOUT IS SOME PERIODIC SAFETY REVIEW AND PART OF THE TEAM MIGHT BE SOME FIRE PEOPLE.

MR. MC FARLAND: NO QUESTION. THIS WILL BE PART OF THE FUNCTION, SOME SORT OF FIRE SAFETY REVIEW. MY QUESTION IS

FREQUENCY.

MR. RHINE: I FEEL, AND I THINK, WE WILL FOLLOW A PRACTICE WHERE SAFETY IS NOT REVIEWED INTO THINGS. YOU DON'T ACHIEVE ANY SAFETY BY SITTING DOWN AND REVIEWING THE BEST EXPERTS OF THE WORLD AND FIND OUT WHAT IS NOT THERE. SO IT IS A DESIGN REQUIREMENT JUST AS STRUCTURAL REQUIREMENTS OR OPERATIONAL OR ANYTHING ELSE WITH THE PRESENCE OF LOS ANGELES FIRE DEPARTMENT THROUGH THE MEANS OF OUR CONTRACT WITH THE CITY. I FOR ONE, IN THE SUBSYSTEM AREA, AM LOOKING FORWARD, FROM THE BEGINNING, WORKING A LOT OF THE SAFETY THINGS IN AND WHEN THE SAFETY PEOPLE, WHO ARE NOT MY STAFF NECESSARILY, HELPING ME MAKE THE DECISIONS SO THAT WHEN THE REVIEW WILL BE MORE OF A FORMALITY THAN A FACT-FINDING SESSION, BECAUSE TO FIND OUT AFTER THE FACT, AFTER IT IS BUILT OR READY TO OPERATE, THE LEAST TO SAY IS BAD AND IT IS MOST LIKELY DEVASTATING, SO I THINK THE SPEAR OF EVERYTHING WE ARE DOING HERE AND THE WAY TO PREDESIGN TO CARRY OUT THAT SAFETY WILL BE FACTORED IN. IT SHOULD BE FACTORED INTO THE VERY BEGINNING AND ALL FACILITIES. AND WE WILL DO IT THAT WAY IN OUR DESIGN EFFORTS BETWEEN THE CRITERIA SYSTEM LEVEL, CRITERIA LEVEL BY RUSS AND THE OTHER PEOPLE.

MR. MC FARLAND: THE SYSTEM LEVEL, SAFETY LEVEL CRITERIA WILL BE THE KEY TO ASSURING THIS PROCESS. LET ME RAISE A POINT AGAIN. I SAID EARLIER THAT WHEN WE LOOKED BACK INTO THE RECORD AND GOT THE IMPRESSION THAT EARLIER IN THE '70'S, IN THE '60'S PERHAPS EVEN THAT THE DEVELOPMENT OF CRITERIA IS A LUXURY THAT PEOPLE DIDN'T HAVE THE OPPORTUNITY TO UNDERTAKE OR TO DOCUMENT. WE CAN FIND ONE COMPLETE SET OF

CRITERIA AT ATLANTA. IF YOU LOOK AT THE OTHER SYSTEMS, WE HAVE ONE SYSTEM CRITERIA, ONE. IT IS THE MIAMI. I AM SURE THERE WERE OTHERS, BUT IT WAS NEVER PUT INTO PRINT. IT WAS NEVER BROUGHT INTO A DOCUMENT.

MR. RHINE: YOU ARE TALKING ABOUT GENERAL CRITERIA AND SO FORTH. YOU SAID A "SAFETY SYSTEM PLAN." THEY ONLY HAD IT AFTER CERTAIN PEOPLE IN THE GOVERNMENT URGED THE INDUSTRY TO PUT DOWN ON PAPER WHAT THEIR GENERAL SAFETY CONCERNS AND METHODS WERE. ALTHOUGH, AGAIN, IT WAS DOCUMENTED TO SOME EXTENT AND PUT SOMETHING ON THE SHELF. IN THE LAST FIVE YEARS THERE HAS BEEN A LOT MORE PROGRESS TOWARD A MUCH MORE ORGANIZED DOCUMENT SAFETY PLAN.

MR. MC FARLAND: DO WE HAVE ANY OTHER COMMENTS, AREAS OF CONCERN OR DISCUSSION? AS I LOOK ABOUT THE ROOM I SEE THE NORMAL 3 O'CLOCK-SECOND-DAY REACTION.

MR. DONATO: ONE AREA WE DIDN'T DISCUSS IS THE GOOD HOUSEKEEPING FOR FIRES. CLEANING TRACK LEVEL IS VERY IMPORTANT. IN MONTREAL WE HAVE A VACUUM TRAIN -- SOME PROBABLY HAVE THEM, SOME DON'T. I THINK IT IS MORE TO KEEP THE TUNNELS IN GOOD CONDITION WITHOUT ANY TRASH. A FIRE COULD START VERY EASILY IN A TUNNEL BECAUSE YOU DO HAVE OIL OR INFILTRATION IF YOU HAVE TRASH ON TOP OF THAT. I THINK IT IS VERY IMPORTANT TO REMOVE THE DUST YOU HAVE ON THE SUBWAY TO PROTECT YOUR ROLLING STOCK, BECAUSE DUST CAN DAMAGE THE EQUIPMENT, ESPECIALLY ELECTRONIC EQUIPMENT. I THINK VACUUM CLEANERS ARE VERY IMPORTANT CLEANING THE SUBWAY.

MR. MC FARLAND: A POINT WELL TAKEN.

MR. DONATO: ONE OTHER POINT, WHERE WE HAVE MOST OF OUR

FIRES IS IN THE TRASH CANS. I WISH SOMEBODY COULD GIVE US A TRASH CAN THAT THEY CAN EXTINGUISH FIRES AUTOMATICALLY. WE HAVE TRIED TO DESIGN SOMETHING, BUT WE DIDN'T SUCCEED YET. I WONDER IF ANYONE ELSE HAS FOUND ANYTHING.

MR. RHINE: WE WILL HAVE TO BE CAREFUL WITH THE TUNNEL CLEANING THINGS. WHEN BART HAD THE TUNNEL WASHING CAR AND RAN IT THROUGH THE TUBE AND THEN SHORTLY THEREAFTER, THE FAMOUS REPORTER RAN THROUGH THERE AND REPORTED HUNDREDS OF LEAKS AND DRIPPING WATER THROUGH THE TUNNEL. ONE MUST BE ALERT TO ADVERSE REACTIONS TO HOUSEKEEPING.

MR. MC FARLAND: ARE THERE ANY OTHER AREAS OF DISCUSSION?

MR. THOMPSON: YES. JUST ONE FINAL THING. AS FAR AS GOOD HOUSEKEEPING IS CONCERNED, ONE OF THE BEST THINGS TO FOLLOW IS THE NFPA CODES. ANYPLACE THAT IS AS CLEAN AS THAT CODE REQUIRES CAN'T BURN. AND THAT'S THE STANDARD FOR OUR INSPECTION, THE NFPA CODES. SO IF YOU FOLLOW THOSE, YOU WILL DO AWAY WITH ABOUT 90 PERCENT OF YOUR PROBLEM.

MR. GRAINGER: I WAS IN ANOTHER MEETING. I DON'T KNOW IF WE TALKED ABOUT THINGS OF FIRE EXTINGUISHERS.

MR. MC FARLAND: AT THIS POINT IN TIME WE FELT IT WAS NOT GERMANE TO ISSUES. A YEAR FROM NOW, A YEAR AND A HALF FROM NOW, BUT AT THIS POINT WE FELT IT WOULD BE DETAILED AND WOULD GO WAY BEYOND WHAT OUR NEEDS ARE.

GENTLEMEN, I SURE WANT TO THANK YOU ON BEHALF OF RTD FOR THE EFFORT, AND IT IS AN EFFORT. AS YOU KNOW, I SAY I LOOK AT THE FACES AND I THINK MOST OF THE GAS TANKS ARE ABOUT DRY. ENERGY LEVELS ARE WAY DOWN EVEN WITH A LARGE

LUNCH OR INSPITE OF THE LARGE LUNCH. I THINK THIS DAY AND THE TWO DAYS HAVE BEEN EXTREMELY FRUITFUL FOR US AT RTD AND FOR MYSELF. AND I THINK THAT IT IS EXTREMELY HELPFUL IN GETTING US INSIDE DIRECTION, IN THE DIRECTION WE SHOULD BE GOING.

MR. GALLAGHER, WOULD YOU LIKE TO --

MR. GALLAGHER: WELL, YOU HAVE SPOKEN FOR RTD. I DON'T THINK I HAVE ANYTHING TO ADD.

MR. MC FARLAND: THANK YOU.

MR. GRAINGER: I WOULD LIKE TO SAY ONE LAST THING. I HAVE ATTENDED ALMOST EVERY PEER GROUP REVIEW, AND EACH ONE I THINK IS BETTER THAN THE LAST ONE. AND I THINK THIS ONE WAS PARTICULARLY GOOD. AND I THINK WE SHOULD GIVE RUSS A ROUND OF APPLAUSE. I THINK HE HAS DONE A GOOD JOB OF EMPLOYING THIS THING.

THE OTHER THING IS, HOW WOULD YOU LIKE TO GIVE YOUR IMPRESSIONS ON --

MR. MC FARLAND: WHAT WE ARE DOING, HOW WE ARE DOING, OR WHAT WE COULD DO BETTER.

MR. GRAINGER: WE OFTEN DO THAT OTHER THAN LETTING US. DO YOU HAVE ANY IDEA OF HOW WE COULD IMPROVE OR --

MR. WEULE: I THINK THAT CERTAINLY IT IS COMMENDABLE THAT YOU CAN ASSEMBLE THIS KIND OF A GROUP TO DO JUST THIS. AND I CERTAINLY THINK IT IS FOR ALL TO BENEFIT, NOT JUST RTD. WE ARE SHARING INFORMATION AS WE ARE GOING THROUGH THIS. AND BY DOING THIS AND IN RECOGNIZING THE PROBLEMS THAT OTHERS HAVE, ONLY THEN CAN THOSE KINDS OF PROBLEMS BE PREVENTED, MAYBE NEW ONES PUT FORWARD. SO I AM IMPRESSED WITH THIS TYPE OF REVIEW.

MR. FARRELLY: I THINK THE INDUSTRY WILL GREATLY BENEFIT, PERHAPS MORE THAN RTD, FROM THE TRANSCRIPT WHEN THEY ARE FINALLY RELEASED IN THE TOTAL AND WE ALL CAN EXAMINE FROM MANY DIFFERENT PROSPECTIVES, FROM THE OLDER SYSTEMS TO THE NEW SYSTEMS, TO THOSE BEING PLANNED, TO THOSE JUST EMERGING. AND SHARE, AS RALPH HAS INDICATED, THE DIALOGUES THAT HAVE TAKEN PLACE IN THIS PEER REVIEW PANEL. I THINK IT IS A VERY, VERY WORTHWHILE ACTIVITY.

MR. LOCK: I WANT TO COMMENT THAT OUR EXPERIENCE, INSOFAR AS EMBARKING UPON A DESIGN OF OUR SYSTEM, WAS AS FOLLOWS: WE WENT TO OTHER TRANSIT AUTHORITIES. I PREPARED AN ITINERARY INSOFAR AS TRAVEL WAS CONCERNED, AND WE INVESTIGATED EXISTING PROPERTIES. WE VISITED THE NEW . . EMERGING PROPERTIES. WE ESTABLISHED DIALOGUE WITH BART. WE HAD A LENGTHY UNDERGOING DIALOGUE WITH WMATA, WITH LARRY ENGLEMAN. AND DOES MOHAMMED GO TO THE MOUNTAIN? DOES THE MOUNTAIN GO TO MOHAMMED? I THINK THIS SYSTEM IS FAR, FAR PREFERABLE THAN WHAT WE EMBARKED UPON. NO QUESTION ABOUT IT. I THINK IT IS A MUCH BETTER PROCESS, BECAUSE YOU ARE ABLE TO GATHER TOGETHER IN ONE ROOM AND DEVELOP A DIALOGUE AMONG DIFFERENT PROPERTIES WHO HAVE HAD THESE PROBLEMS. AND SO IT SHOULD BE SORT OF SYNERGISTIC. THE OUTCOME SHOULD BE A LOT BETTER THAN SEEING EACH ONE INDIVIDUALLY, AND HOPEFULLY THAT IS THE CASE. I ENDORSE THE PROCESS WHOLEHEARTEDLY.

THE OTHER COMMENT I WANTED TO MAKE WAS THIS: THE ONE BIG ACTIVITY THAT WE WERE INVOLVED IN EARLIER WAS ESTABLISHING THE ACTUAL DESIGN CONSTRAINTS OR SYSTEM CHARACTERISTICS WHICH I AM SURE YOU WILL BE DOING AS WELL.

AND THIS QUESTION OF "DO WE DESIGN MANNED STATIONS OR UNMANNED STATIONS? DO WE HAVE BACKUP CAPABILITY? DO WE BRING IN THE CONDUIT STEPS AND PUT A KEY ON IT IN CASE WE ARE GOING TO HAVE ATTENDANTS OR NOT? ARE WE GOING TO GO TO FIXED FARES, ZONED FARES? AND WHAT TYPE OF EQUIPMENT IS NECESSARY?"

AND IT HAS A TREMENDOUS IMPACT INSOFAR AS YOUR SYSTEM IS CONCERNED. EACH ONE OF THESE SUBSYSTEMS HAS TO BE CONSIDERED IN THAT LIGHT. AND THE DESIGN CONSTRAINTS YOU PLACE ON YOUR SYSTEM WILL THEN BE VERY IMPORTANT, NOT ONLY FROM A SAFETY POINT OF VIEW, BUT FROM EVERY OTHER SYSTEM AS WELL.

MR. DONATO: I LIKE VERY MUCH THE FORMAT YOU HAVE, BECAUSE IT HAS ALLOWED US TO LEARN ABOUT WHAT THE OTHER PEOPLE ARE DOING. WHEN PEOPLE COME TO SEE US IT IS ONLY IN EXCHANGE ONE WAY. HERE ONE CAN BENEFIT FROM THE COMMENTS OF OTHER PEOPLE AND WE CAN ASK QUESTIONS. I THINK WE NOT ONLY GIVE INFORMATION, WE RECEIVE INFORMATION.

MR. MC FARLAND: I THINK MR. LOCK'S COMMENT ON DISSYNERGISM IS THE MOST IMPORTANT RESULT OF THE INTERACTION. WE WOULDN'T GET GOING TO EACH PROPERTY SEPARATELY.

MR. THOMPSON: I FEEL THAT I HAVE GAINED MORE FROM THIS THAN I HAVE GIVEN IN A LOT OF WAYS, BECAUSE THE INFORMATION I HAVE RECEIVED FROM THE OTHER AUTHORITIES CERTAINLY GIVES ME A MESSAGE TO TAKE BACK TO MY ATHORITIES. AND I THINK I WILL HAVE A VERY INTERESTING DISCUSSION WITH SOME OF OUR OFFICIALS.

MR. SALYER: I WOULD JUST LIKE TO SAY THAT MY PARTNER BILL LUBBUCK, THAT COULDN'T BE HERE TODAY, GREATLY

APPRECIATES BEING INVITED. WE FEEL IT IS VERY PRODUCTIVE, AND WE HOPE YOU WILL CONTINUE TO INVOLVE US FROM HERE ON.

MR. MC FARLAND: WE WILL, BY ALL MEANS. I THINK WE HAVE TO SIT DOWN AND FIGURE OUT HOW TO BRING THE COUNTY INTO IT. OUR CONTRACT IS WITH THE CITY AND IT IS THROUGH THE CITY TO YOU.

MR. SALYER: WELL, ONE WAY OR THE OTHER WE CAN MAKE SURE THEY ARE INVOLVED.

MR. LUTKUS: I THINK THIS IS AN EXCELLENT PROCESS TO DEVELOP A NEW SYSTEM, BECAUSE ONE OF THE MOST IMPORTANT THINGS IN SAFETY IS THE PLANNING STAGES. AND RIGHT HERE YOU ARE GETTING ALL THE ADVANTAGES OF THE EXPERTISE OF THE GOOD AND THE BAD OF VARIOUS SYSTEMS. SO I THINK RTD IS QUITE FORTUNATE THAT THIS TYPE OF ARRANGEMENT WAS MADE. AND I THINK YOU WILL BE ABLE TO TAKE GREAT ADVANTAGE OF IT. AND WE ARE PLEASED THAT WE WERE INVITED HERE TO BE PART OF THIS.

MR. MC FARLAND: IT WAS MR. GALLAGHER'S FORESIGHT. IT WAS DICK; AM I CORRECT?

MR. GALLAGHER: I AM NOT GOING TO ARGUE WITH YOU.

MR. MC FARLAND: WELL, GENTLEMEN, WITH THAT, WE WILL ADJOURN THE MEETING. I, AGAIN, WANT TO THANK YOU FOR YOUR TIME AND THE EFFORT AND THE ENERGY INVOLVED.

(THE PEER REVIEW MEETING WAS ADJOURNED AT 3:20 P.M.)

STATE OF CALIFORNIA)
) SS.
COUNTY OF LOS ANGELES)

I, CYNTHIA R. SPERRY , THE UNDERSIGNED OFFICIAL REPORTER FOR THE WITHIN MATTER, DO HEREBY CERTIFY THAT THE FOREGOING PAGES, 4 THROUGH 120, INCLUSIVE, DO CONSTITUTE A FULL, TRUE AND CORRECT TRANSCRIPT OF THE PROCEEDINGS HELD BEFORE ME ON OCTOBER 15, 1981.

Cynthia R. Sperry