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Mysore L. Nagaraja
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Capital Construction

March 24, 2006

Hon. Nancy Shevell Blakeman, Chair
MTA Capital Construction, Planning and Real Estate Committee
347 Madison Avenue
New York, NY 10017

Re: Response to George Haikalis's Letter dated February 28, 2006

Dear Board Member Blakeman:

Mr. Haikalis' February 28, 2006 letter to you details a number of points in response to my February 2006 committee presentation on the Upper Level Loop Alternative/Delcan Proposal. At that meeting we pointed out the many shortcomings of the ULLA/Delcan concept.

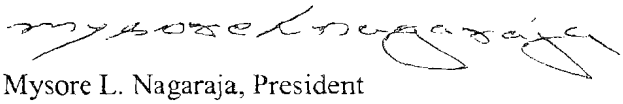
The attached detailed response fully addresses each of the points that Mr. Haikalis continues to raise. In sum, the proposal is fatally flawed due to its:

- Severe and permanent operational impacts on Metro North.
- Inability to meet the need for 24 LIRR trains in the peak hour to Grand Central Terminal (GCT).
- Failure to provide adequate circulation space within Grand Central Terminal.
- Failure to address critical ventilation and safety improvements that would be necessary to accommodate the increased number of customers in the existing GCT.
- Failure to account for the significant time (up to four years) that would be required for environmental studies and new property acquisitions.

Finally, the claimed cost savings cannot be realized because the cost of all the critical features omitted in the ULLA/Delcan proposal to safely and reliably operate trains, erodes any cost savings. The result would be a very inferior service that does not meet the service level needs of the LIRR and would require a permanent 25-30% reduction in current Metro North peak hour service levels.

As noted by Commissioner Feinstein at the February 2006 Committee meeting, this should be our last review of why the ULLA/Delcan proposal is not feasible.

Sincerely,



Mysore L. Nagaraja, President

Attachment

cc: Capital Construction, Planning and Real Estate Committee Members
Peter Cannito
James Dermody

Introduction

A report entitled "Assessment of the Upper Level Loop Alternative for the Manhattan Portion of the East Side Access Project", prepared for the Institute for Rational Urban Mobility by the Delcan Corporation was submitted to MTA in the fall of 2004 (hereafter referred to as the Delcan Report). The Upper Level Loop Alternative is a variation on an alternative, called the "Apple Corridor" that was submitted by the Committee For Better Transit (CBT) in 1996 for consideration in the transportation planning process from which the East Side Access project emerged. The Haikalis/Delcan proposal and its variations have been submitted a number of other times over the last decade to MTA (and its board members), elected officials, and industry professionals. Meetings between Mr. Haikalis and his supporters and project/railroad staff have taken place on a number of occasions. Serious consideration has been given to the most recent Haikalis proposal, however, fatal flaws associated with the use of the upper level loop plan, affecting both Metro North Railroad (MNR) and Long Island Railroad (LIRR) service, have been identified. These fatal flaws remain unacknowledged by Mr. Haikalis and the Delcan Corporation. While the rest of the transportation industry supports the current East Side Access design and understands the serious flaws associated with the Upper Level Loop Alternative, Mr. Haikalis and the Delcan Corporation believe that MTA has not given serious consideration to their proposal.

The FEIS found the Apple Corridor scheme to be fatally flawed due to its significant adverse impacts on MNR service (existing service as well as planned) and its inability to meet the LIRR service requirements that were defined for the East Side Access project. The Upper Level Loop Alternative proposes the same Manhattan alignment as the Apple Corridor scheme and would have the same fatal flaws (i.e., severe impacts to MNR service and LIRR service shortfalls).

The most recent resurrection of the Haikalis proposal can be attributed to the controversy over the 50th Street Facility. The Kaufman Organization funded the Delcan Report in an effort to support their litigation on the 50th Street Facility. Mr. Haikalis wrongly asserts that a 50th Street Facility would not be required if the upper level of Grand Central Terminal is used for the new service. In fact, the Haikalis/Delcan proposal makes no provision for emergency or normal ventilation in the existing tunnels and terminal, despite the fact that East Side Access will nearly double the number of railroad customers using GCT today, and increase train service by about 75 percent. As indicated in the responses provided below, even if a 100-year old terminal had ventilation/emergency systems that met current safety standards, this increase in passengers and trains would still trigger the need for additional facilities.

Mr. Kaufman has withdrawn his support, both monetary and in principal, for the Haikalis/Delcan proposal (see attached e-mail) since the issues on the 50th Street Facility were resolved late last year. Nevertheless, Mr. Haikalis is doggedly advocating his proposal, attempting to capitalize on the results of the Delcan Report. This report is remarkably un-informed and a point by point response to Mr. Haikalis' latest assertions, which critique a presentation given by Mysore Nagaraja to MTA board members regarding the Upper Level Loop Alternative, is presented below.

East Side Access Overview

A key goal of the ESA project is to operate 24 trains per hour into GCT in the Peak period without any negative or adverse impacts to the quality of MNR service, MNR service levels (present and projected), and MNR's ability to reach operating and safety performance targets. This fundamental and guiding principle, fully vetted and agreed to by all operating agencies, is included in the ESA project Design Criteria and was a basis for the positive Record of Decision issued by the Federal Transit Administration to conclude the environmental review process. The Haikalis/Delcan plan fails to address the LIRR operating goal and, more importantly, the temporary and permanent impacts to MNR.

The design of the project reflects this key goal as well as delivering a 21st Century transportation system to accommodate approximately 160,000 daily customers who will ride the new service to East Midtown. With East Side Access, the number of commuter rail passengers in GCT will nearly double the approximate 190,000 daily MNR customers utilizing GCT today. While the Upper Level Loop Alternative makes absolutely no provisions for passenger circulation space in and around GCT, East Side Access includes:

- Eight platform tracks accommodating 12-car trains;
- Multiple banks of escalators, elevators and emergency stairs;
- Four mid-level mezzanines and three cross-passageways;
- A large concourse in the area currently occupied by MNR's Madison Yard;
- Passenger amenities in the new concourse including ticketing and information booths, restrooms, waiting room seating, retail elements and required administrative, operational, and mechanical support spaces;
- New exits/entrances to the GCT complex from the new LIRR concourse and to the street.

February 28, 2006 letter from George Haikalis to Hon. Nancy Shevell Blakeman

Mr. Nagaraja cited several concerns about the Upper Level Loop Alternative. Detailed below are the major subject areas in Mr. Haikalis' correspondence, Mr. Haikalis' comment and the MTA's response.

1. The plan could only accommodate 12 trains per hour, not the 24 trains per hour that could be handled by the Deep Cavern plan.

Mr. Haikalis comment: The Delcan study found that that the Upper Level Loop Alternative had a capacity of 24 trains per hour in the morning peak and 18 trains per hour in the evening peak. MTA's analysis of its Deep Cavern station, shown in the project's Final Environmental Impact Statement, did not include an estimate of evening peak hour capacity. Mr. Nagaraja's estimate of a much lower capacity is based on his claim that trains could not operate around the upper level loop at speeds greater than 4 mph. Delcan calculated the speed at 12 mph. Delcan's calculation was based on standard railway engineering practice developed over the past 150 years, which takes into account comfort and safety factors. Mr. Nagaraja offered no technical analysis to support his claim.

MTA Response:

There is an inconsistency between what the Haikalis/Delcan report states and what Mr. Haikalis says. The Haikalis/Delcan plan states that 24 trains per hour can be accommodated operating at speeds of up to 15 to 18 MPH utilizing the loop track. Mr. Haikalis states that speeds of 12 MPH will support the plan's level of service. In reality, the design speed for the upper level loop track, based on track structure and geometry, is 10 mph. However, Metro-North does not believe that such a speed is sustainable due to excessive rail wear and very close side clearances which could result in trains hitting the walls if there is any lateral motion due to track or equipment defects. Metro-North believes, therefore, that a realistic operating speed on the loop is 4 MPH, which would result in only 12 LIRR trains per hour in the peak. In addition, evacuating a train would be exceedingly difficult within the limited clearances of the loop. This is a greater issue with LIRR trains due to the length of the trains (12 cars vs. MNR's average length of 8 cars) and the number of trains that would be operating on the loop track.

Furthermore, in order for the Haikalis/Delcan plan to work, it is necessary to take running tracks, lead tracks, platform tracks and yard access away from MNR for use by LIRR. This not only reduces capacity in GCT for MNR but it would force MNR to operate its four Park Avenue tunnel tracks with 2 inbound and 2 outbound (current operations are supported by the configuration of 3 inbound tracks and 1 outbound track in the AM peak and vice versa in the PM peak), in order to support an increased flow of outbound trains to access outlying yards to make up for the lost yard access in GCT, as well as the loss of platform capacity. In total, this would permanently reduce MNR service in peak periods by 20-25% with no ability to expand service.

As a result of these speed limitations, only 12 trains per hour could operate under the Upper Level Loop Alternative, which would not meet the service levels required. By contrast, East Side Access is fully responsive to LIRR and MNR passenger service operating requirements. The current design for East Side Access will accommodate the demand for the foreseeable future (year 2020) and beyond, by providing for a safe practical capacity of 30 trains per hour, while reliably supporting operation of 24 scheduled trains per hour.

The Delcan Report is silent on the magnitude, disruption, and cost of alterations to the upper level platforms, switches, and tracks that would be required to make the existing platforms long enough, and trains fast enough, to meet the 24 train per hour capacity that would make the new service cost-effective. Improvements to GCT infrastructure to increase speeds would be very costly, cause unavoidable impacts on the Lexington Avenue subway and the Times Square Shuttle passageway, and involve complex, high risk construction. It is important to remember that Grand Central Terminal, built in 1914 for intercity rail on the upper level and commuter service on the lower level, was also a real estate development project. There are thousands of columns -- as close as five feet apart- lining the network of narrow platforms and tracks. These columns support MNR tracks, Park Avenue real estate, and other midtown skyscrapers. The tracks and platforms on the upper level were not built to support the volume of passengers that will be seen with East Side Access, and the upper level loop track can not support passenger service at the required speeds and frequency without major rehabilitation, which would constitute high risk and costly construction.

Existing switches would need to be replaced and the loop track would have to be widened and super-elevated. These are major cost items due to the existing building infrastructure (including the columns and tracks) and proximity to the foundations of skyscraper office buildings in the GCT trainshed. Such improvements would require the underpinning of dozens of buildings and impact the Times Square Shuttle passageway and the Lexington Avenue subway and would also be hindered by existing space constraints. In reality, these types of improvements are not feasible due to the configuration of existing crash walls and track layout. None of these costs have been included in the Delcan proposal.

2. The Upper Level Loop Plan cannot provide reliable service because of its "single point of failure".

Mr. Haikalis comment: The 63rd Street tunnel Lower Deck has only two tracks available for LIRR service – one for westbound trains heading toward Manhattan and one for eastbound trains heading toward Queens. Should a train stall in the tunnels very serious delays would occur, regardless of the design of the Manhattan terminal. MTA has not made a comparison of the reliability of its eight track Deep Cavern station which includes four tail tracks and a five track station connecting to the Upper Level Loop. Such a comparison would almost certainly show that the Upper Level Loop Alternative, which has far fewer switches than the Deep Cavern Plan and does not require a change in direction, would have far fewer points of failure.

MTA Response:

The eight track terminal has been fully simulated and shown to meet all LIRR operational requirements while providing for the safe practical capacity of 30 trains per hour, while reliably supporting operation of 24 scheduled trains per hour. The tail tracks support the train capacity and also provide disposition of trains that are taken out of service in such a way as to have minimal impact on rush hour operations.

By contrast, under the Upper Level Loop Alternative, use of the single track loop for revenue service is problematic since any disabled train in the loop would shut down service until the obstruction is cleared. This would result in unreliable service and poor on-time performance.

3. Metro-North operations would be severely impacted by the construction and operation of the Upper Level Loop Alternative

Mr. Haikalis comment: Delcan was assisted it its railway operations analysis by Michael Schabus, owner and operator of several private commuter railways in the UK. They carefully studied the current Metro-North operating plan and suggested measures that would minimize adverse impacts. At the meeting neither Mr. Nagaraja, nor Metro-North President Peter Cannito, identified specific impacts that were not addressed in the Delcan study nor did they take exception to any of the measures proposed by Delcan. With 46 platform tracks, Grand Central Terminal is the world's largest rail station. Its utilization level is far below railway stations at key locations in Europe, and certainly far below LIRR experience at Penn Station.

MTA Response:

The response to this point will be on the permanent impacts to MNR operations and impacts to MNR during construction.

- Permanent Impacts to Metro-North Operations

Assertions are made that the MNR operating plan and physical configuration were carefully studied and measures were suggested to mitigate impacts. In reality, the Haikalis/Delcan report shows that the impacts are extremely severe, involving considerable degradation to MNR operating performance and service delivery. It is important to note that the proposed mitigations fail to satisfactorily address the impacts, thereby failing when compared to the guiding principle of no or minimal impacts to MNR operations. In the Haikalis/Delcan report there are numerous references to MNR service disruptions, changes and impacts both during construction and in the final proposed configuration.

The following points made in the Haikalis/Delcan report are either factually incorrect or represent invalid assumptions and conclusions:

- **It is feasible to assign Tracks I and C to LIRR service, leaving eight Metro-North running tracks ("throat" tracks in Haikalis/Delcan terminology). This assumes that track A is reconnected. In such a plan, MNR can operate with one running track for each Park Avenue Tunnel track, leaving the remaining four tracks for yard moves, storing trains and construction.**

  Metro-North cannot effectively operate with one running track for each tunnel track; a minimum of two running tracks per tunnel track are required. The transition from 60 mph operation in the tunnel to 10 mph operation in the Terminal requires that trains be separated ("fanned out") on the running tracks; otherwise, trains will begin bunching up and

experiencing delays. Calculations show that having only one running track available for each tunnel track would result in a decrease in throughput from the current 1 train every 2.5 to 3 minutes (20-24 trains per hour per track) to 1 train every 3 to 4 minutes (15-20 trains per hour per track), a 20-25% reduction in capacity. GCT peak operations also require the ability to make parallel moves; that is, to have trains moving simultaneously along several routes within the terminal complex. The reduction in running tracks limits this capability as well. For outbound moves, it is necessary to feed trains from two or more running tracks into the tunnel track to ensure that maximum capacity is attainable in the tunnel.

Currently, eight of the nine running tracks are used primarily to feed and/or accept tunnel traffic, and the ninth track (Track C) is used for upper level yard moves (Track A serves this purpose on the lower level). While it is possible to operate successfully for short periods with one less running track, this level provides little flexibility and is not sustainable over long periods. The Delcan assumption that MNR could operate on six running tracks during construction is absolutely incorrect. A reduction in running tracks and ladders would have negative impacts on GCT peak operations.

In February of 2000, ESA conducted a train operations workshop to analyze and best configure a proposed interlocking and terminal arrangement. At that workshop it was demonstrated that a simple 2 track operation could not support 2.5 minute headways. The determining factor was then, and is now, the necessary distance and time for deceleration. Trains had to be separated at speed in order to avoid ripple delay, and allow for multiple and simultaneous routing.

In the PM, the adjustment had to be made, not just in number of running tracks, but in the length of the track circuits, the distance between signals and switches to "release" routes for trains following each other as the distance to be traversed and the speed of travel exceeded the 2.5 minute headway between dispatchments.

For example: trains operating on 2.5 minute headways initially at 60 mph decelerate to 10 mph and in so doing, the distance between the rear end of train A and head end of train B reduces to 1231 feet. Train A reaches the access point for platform routing and must travel its own length to clear that point and allow for routing of a following train. Train A then travels 1020 feet (12 cars) at 14.7 feet/sec, consuming 69 seconds. Train B has to travel 86 seconds plus 69 seconds, 2 minutes 35 seconds, to clear for Train C. The 2.5 minute headway is thus exceeded. Trains are forced to slow down "further back" on the mainline. Delays are incurred not because of platform availability but because of the transition times and distances.

- **There are a number of underutilized tracks in Grand Central that, by better utilization, would accommodate all the trains currently using the loop tracks.**

First, Haikalis/Delcan is in error with reference to the number of these tracks, as shown in the table on page 29 of the Haikalis/Delcan report); specifically:

- Tracks 22 and 31 were permanently removed to make room for the GC North passageways.
- Track 14 is a non-revenue track used for recycling and garbage cars, and is not suitable for use by passenger trains.
- Track 113 was not included in the 1990's interlocking improvement plan, and is not in service. This track, however, is scheduled to be reconnected to the interlocking as part of the ESA lower level improvements.
- Track 116 holds four cars, not five, and thus is usable for only a very small number of trains.

Second, the track utilization efficiency cannot be calculated based on the percent of time that a track is occupied. The key metric is the percentage of tracks that are occupied at the peak time during the rush hour. At Grand Central, this critical time is between 8:30 and 8:45 a.m., and in that time period, every available revenue track, except as noted in the next paragraph, is occupied. The fact that 30% of the tracks may have been unused in the previous 30 minutes is immaterial.

Based on experience and operating practice, three passenger tracks are unassigned during the peak periods. In the time period sampled by Delcan, these were tracks 28, 39 (not shown in the report) and 106. MNR must allow for any two tracks to be out-of-service at any time for maintenance and capital work (currently tracks 26 and 27 for switch replacement), and one track must always be available for late trains, unscheduled turns, trains with mechanical problems, etc.

- **Any platform track can be substituted for any other platform track in reassigning trains from the loop.**

Trains are assigned to GCT tracks based on their size, type (EMU or locomotive hauled) and route. Reassigning a Hudson train from track 42 to track 24, for example, creates serious routing conflicts within the terminal which results in train congestion at CP1. Upper Level trains cannot be routinely routed to the Lower Level if they are locomotive hauled (because of the grades) or if they are sufficiently large to create a customer flow problem on the narrow lower level platforms and stairways.

- **Trains can be "double berthed" on long platform tracks to create additional capacity.**

Stacking two trains on a platform track was an accepted, but seldom used, Metro-North operating strategy in the late 1980's. This practice represents a significant inconvenience for customers, increasing the time required to exit a train to the terminal. More significantly, with the opening of Grand Central North in the late 1990's, this practice was discontinued in all but emergency situations due to the construction of the stair enclosures on the north ends of the platforms. These enclosures, which are generally 6 to 10 car-lengths from the block, occupy 50% or more of the platform width. Unloading a train mostly or entirely north of these enclosures forces customers to exit south and traverse the narrow passages between the enclosure and the platform edge. The resulting customer flow rates are unacceptable from a customer service and safety perspective. The practice of stacking trains was specifically prohibited from consideration when the original MOU between MNR, LIRR and ESA was developed in 2000.

- **Additional capacity can be created by more efficient service time of equipment on the platforms.**

  The time required to clean and service trains for outbound trips is never the governing criteria for platform occupancy. Outbound trains are scheduled to meet customer demand, schedule pattern and the availability of operating slots in the Park Avenue Tunnel and along main line tracks.

- **The amount of time required to yard a train (i.e. clear a platform track for another train) is 201 seconds; hence, all 16 yard trains can be handled in less than one hour of track occupancy time on a running track.**

  The Haikalis/Delcan report's basic equation is flawed in a number of ways; primarily in that it assumes an average speed of 10 mph. The maximum speed is 10 mph; average speed will be considerably less, taking into account acceleration and deceleration and any delay due to conflicting moves, signal clearance times, etc. Haikalis/Delcan allowed only 20 seconds for the move to change direction; in practice, this is considerably higher depending on whether the move is being made by an engineer alone, two engineers or an engineer and a conductor. Haikalis/ Delcan also incorrectly assumes that the reverse move is made at the first switch where the train clears the platform, when in fact trains may have to travel a considerable distance before being able to change ends (for example, from track 105 to ladder T to track 150 to ladder N to track A). In all, MNR believes that 8-10 minutes per yard move is a more reasonable estimate. Haikalis/Delcan also fails to include the five yard moves currently made off the loop in their calculation.

- **Metro-North could provide the same service level with fewer trains by increasing train lengths.**

  Increased train length implies one of two alternatives; either outlying stations receive less frequent service in order to fill the larger trains, or two or more service zones are combined, resulting in more stops per train and longer travel times for customers. Either of these options would significantly degrade the quality of service that Metro-North provides its customers, and as such, violate the basic premise that MNR not be adversely affected by the ESA project. This concept is also in conflict with Delcan's earlier proposal to "double-berth" trains, which requires train lengths of no more than 6-7 cars.

- **Metro-North may have to alter its operating plan from a 3:1 ratio of inbound to outbound capacity.**

  This option has a significant service impact. Haikalis/Delcan recognized in their report that MNR cannot, under the current operating plan, operate any additional reverse peak trains in the peak hour; the single outbound track is at capacity. They are correct in this assumption. The only feasible alternative would be to change the operation in the Park Avenue Tunnel and Viaduct from 3 tracks inbound/1 track outbound to 2 tracks inbound/2 tracks outbound. By doing so, it would be possible to dispatch every arriving train during the peak period. However, as Haikalis/Delcan itself notes, MNR currently operates 51 inbound trains on

three tracks in the peak hour. Going to a two track inbound operation would limit that capacity to 20 trains per track, or a total of 40 trains. This represents a 21.5% reduction in service, and permanently prohibits any service growth during the peak hour. This is a major service impact to MNR customers; hence, this option is not acceptable.

In sum, all of the strategies proposed by Delcan are fatally flawed, either for operational reasons or because they have a major negative impact on MNR's service to its customers. In fact, we do not believe that there are any strategies or combinations of strategies that can adequately mitigate the impacts to Metro-North of the Upper Level ESA Plan.

➢ Construction Impacts to Metro-North Operations

Temporarily removing the west end of Ladder L connecting tracks J &I and track I &H in order to permit construction of the portal at 33+90 means that no trains operating on track 2 in the Park Avenue Tunnel can be routed directly to J or H to access platform tracks on the upper or lower level. Access will be to/from Ladder Y, or Track F-Ladder U, effectively creating a single track operation on each level, preventing simultaneous northward and southward movement.

The Haikalis/Delcan Report states, "The two adjacent tracks used by MNR for access to the upper level (track H) and lower level (track J) may be affected to varying degrees during this phase of construction over at least part, if not all of the time required to build the new structures." That is not a minimal impact. That is a major service obstruction.

The Haikalis/Delcan plan also states, "It would be very difficult to avoid encroachment into the operating envelope for MNR operations on track J, and would therefore likely require MNR operations restricted to other lower level access tracks during construction." Again this is no minimal impact. This is a major disruption as it would leave only one track in each direction to access the lower level from the Park Avenue Tunnel. Loss of access to track J would make access to yard storage tracks 165 through 125 more difficult and inefficient.

At various other points in this section, the Haikails/Delcan plan discusses encroachments on track H, track D and track B during construction. Each of these would result in a major service disruption to Metro-North, which could curtail peak service by as much as 50%.

4. The alignment of the Upper Level Loop Alternative places it in conflict with the Lexington Avenue express tracks and the 60th Street tunnel tracks.

Mr. Haikalis comment: Delcan based its analysis on key findings of MTA's Major Investment Study (MIS) that analyzed a Lower Level Alternative. The alignment and clearance problems cited by Mr. Nagaraja were fully addressed in this earlier MTA study which was conducted by MTA consultant STV. MTA Response:

Mr. Nagaraja was misinterpreted on this point. He stated that an impact to the Times Square Shuttle passageway would occur if the loop track were widened to accommodate higher speeds.

5. The Deep Cavern station is no further below the surface than the Lexington Avenue station on the 63rd Street line, served by the F line.

Mr. Haikalis comment: Delcan fully addressed the fire safety issues associated with the Upper Level Loop Alternative. A similar analysis is not available for the Deep Cavern plan. Delcan estimated the travel time savings of the Upper Level station compared with the Deep Cavern. Anyone who has used the F train station is familiar with the inconvenience associated with a deep cavern station. In the case of the Lexington Avenue F train stop, this is a relatively minor station that handles few travelers. A deep cavern station for the LIRR will mean that all travelers will have to face this nuisance. The security risks associated with this station are certainly far greater than with Upper Level Loop station. No serious discussion of the fire safety issues associated with the deep cavern station have been made public.

MTA Response:

Ironically, it is the Upper Level Loop Alternative that would not meet the relevant safety standards for underground tunnel systems and passenger rail stations. As indicated above, the upper level of the nearly 100-year old terminal was not constructed with safety provisions for the volume of passengers that will be delivered with East Side Access. Such provisions are known to be the difference between railroad incidents and disasters.

For example, the Delcan Report does not contain any provision for new emergency exits in the loop track area, which would be used for revenue service, or proper tunnel and station ventilation that would be required with the construction of a major capital transportation project (which increases train traffic in the existing tunnel and terminal by 75 percent and nearly doubles the current number of passengers). New emergency exits to the street would have to be constructed to meet today's code to permit egress from the loop track and tunnels in the event of a stopped train and to permit access for emergency personnel in the event of a fire. Current federal safety standards would dictate ventilation facilities for the Upper Level Loop Alternative similar to those proposed for the East Side Access Project (i.e., at 63rd Street and Second Avenue, 55th Street, 50th Street, and 44th Street) and additional facilities above the existing loop track where passenger-loaded trains would operate. It is unrealistic to believe that a project costing billions of dollars, that will serve hundreds of thousands of people every day, could be built without incorporating modern safety standards and complying with the intent of the relevant building codes. The Delcan proposal assumes just that. Even if the project were to file for the many variances that would be required, MTA and their design team would be unwilling to accept the responsibility for such an inadequate and unsafe design.

By contrast, the design of the new tunnels and terminal in the deep cavern scheme meets the applicable standards of NFPA 130 and the New York State building code. The current GCT plan provides code-compliant egress at six locations from the platforms, leading to four code-compliant mezzanines. In accordance with NFPA 130 standards, the

mezzanines will function as the "Points of Safety" from the platforms, serving as transitional space if the terminal needs to be evacuated. The mezzanines will be constructed of 3-hour fire resistance rated floor/ceiling materials which, in addition to the use of glazed partitions, automatic sprinklers and a modern emergency ventilation system, will provide a minimum of 1-hour protection from thermal and smoke effects of a fire on the platform levels in accordance with safety standards.

From the mezzanines, code-compliant egress is provided by escalator banks and emergency stairs leading to the concourse which will act like a "manifold" allowing distribution of passengers to code- and ADA-compliant exits to the street. The Upper Level Loop plan includes none of these features. In fact, it would cause overcrowded conditions at a number of critical circulation points within the existing GCT, as it does not create a single square foot of new passenger terminal space for the approximately 160,000 LIRR daily customers.

Overall, the new station design is state-of-the-art, with safety features more advanced than those in existing stations in the region. In addition to emergency egress, East Side Access ventilation and smoke evacuation will also meet code requirements and the latest industry standards.

6. Cost will be substantially higher than those projected by Delcan

Mr. Haikalis comment: Delcan made a careful analysis of the cost elements identified in the Deep Cavern plan and estimated the likely cost of its plan based on MTA costs. The Upper Level Loop Alternative requires far less excavation, far fewer escalators and elevators and many fewer track elements. If anything, Delcan's estimate of saving $1.2 billion in construction cost may be conservative. A truly reliable estimate of costs of each alternative could only be done by a knowledgeable third party with construction experience in the New York area.

MTA Response:

The Delcan cost estimate is not a comprehensive estimate as it ignores several high cost items that would be required to construct and operate the Upper Level Loop Alternative. As proposed, the Upper Level Loop Alternative would not meet fire/life safety standards in the areas of ventilation or emergency egress. The Delcan Report assumed a cost savings in the area of ventilation, when in fact, ventilation for the Upper Level Loop would be more expensive than with East Side Access as a result of the additional facilities required to ventilate the loop track. In addition, the Delcan Report severely underestimates costs for working within the confines of an operating railroad, costs for underpinning the NYCT structure at 60th Street, costs of railroad force account personnel, and costs to mitigate significant impacts to Metro-North service both during construction and operation of the Upper Level Loop Alternative. As indicated below, a new environmental review and property acquisition process would delay the mid-point of construction in both Queens and Manhattan and costs related to escalation would need to be included. When these additional costs are added to the Delcan cost estimate, the savings are negligible.

If the cost to reconstruct the loop track were added to the Delcan estimate (to permit the service levels required by East Side Access), the cost of the Upper Level Loop Alternative would exceed that of East Side Access. While costly improvements could be made to GCT's infrastructure to permit greater LIRR service, the Upper Level Loop Alternative still would not create any new passenger space for the 160,000 new passengers, would have unacceptable and unavoidable impacts on Metro-North service both during construction and permanently, and the service would be unreliable (due to the single loop track). For these reasons, the current deep cavern design was selected as the preferred alternative over the Upper Level Loop Alternative.

7. Procedural changes needed to advance the Upper Level Loop Alternative will delay completion of the four to five years.

Mr. Haikalis comment: MTA has made numerous changes in its LIRR East Side Access plan since the Record of Decision on its Final Environmental Impact Statement was issued. Most notable among these was the addition of the 50th Street Vent Building and its subsequent redesign to meet community objections. Since the Upper Level Loop Alternative has fewer adverse impacts modifications to the environmental analysis can be advanced quickly. Subsurface easements for the Upper Level Loop Alternative are very similar to those negotiated by MTA in the MIS phase of the study. Delcan estimated that the far simpler Upper Level Loop Alternative would cut three years off construction time.

MTA Response:

The magnitude of the design change under the Upper Level Loop Alternative can not be compared to the other design changes made by ESA since the 2001 Record of Decision. The significant (unavoidable) adverse impacts on train service in Metro-North commuter territories in Westchester and Connecticut alone would trigger the preparation of a supplement EIS (by contrast the 50th Street Facility required only an Environmental Assessment). Furthermore, since the ULLA alignment would affect all of the work in Manhattan and more than 50 percent of the project cost, federal regulations would not allow contract awards in Manhattan or Queens until the NEPA process is complete (an approximate two year delay). A new Manhattan alignment would require new subsurface easements, which also requires the NEPA process to be complete prior to commencing

the property acquisition process. The Manhattan work represents the critical path to project completion. As a result, the construction completion year would be delayed directly by the delay related to environmental review and property acquisition.

8. Final point on Board responsibility

Mr. Haikalis comment: In closing, it is important to note that the increased responsibilities of board members of authorities operating in New York State, discussed at the outset of yesterday's meeting, make it imperative that MTA board members do a careful job of reviewing credible alternatives. This is especially important when considering the LIRR East Side Access project, which is by far MTA's largest capital investment. By not inviting Delcan to respond to Mr. Nagaraja's critique of its work, the

committee has done a profound disserve to taxpayers, riders and a well-respected engineering firm.

MTA Response:

The Upper Level Loop Alternative has been reviewed and rejected unanimously by: railroad operating personnel from both Metro-North Railroad and Long Island Rail Road; the presidents of both railroads; East Side Access tunnel engineers from the tri-venture team of Parsons Brinckerhoff, Parsons Transportation Group, and STV; constructability engineers from the Bechtel/URS Joint Venture team serving as Program and Construction Managers for the East Side Access Project; MTA's independent engineer; and FTA and their oversight engineers. Additionally, the MTA's proposed design for East Side Access was reconfirmed since the FEIS was completed independent of the proponents of the Upper Level Loop Alternative. When the responsibility for building East Side Access was transferred to the MTA Capital Construction Company (MTACC) in July 2003, one of the first actions taken was a thorough review of the design options for East Side Access to confirm the project's scope and budget. The analysis included a review of planned service levels, ridership assumptions, exiting capacity and whether or not LIRR train service could be accommodated within existing GCT space. To further validate these efforts, an outside firm with no prior involvement with East Side Access was utilized. The result of these efforts was a reaffirmation that the current design for East Side Access is the proper one. It is the only design plan that provides for sufficient capacity to meet projected demand; it does not overload the existing customer circulation areas of GCT; does not adversely impact Metro-North's existing and future operations; and allows both railroads to meet their long-term growth potential.