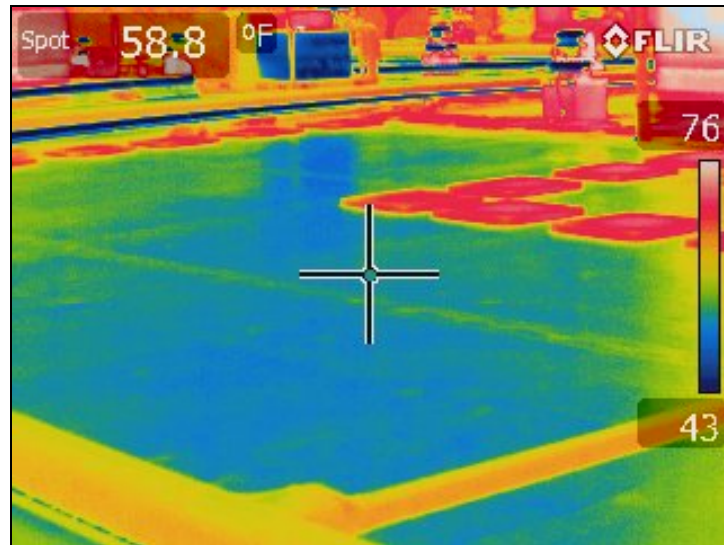


ROOF SYSTEM INFRARED SCAN EVALUATION



**CULINARY INSTITUTE OF AMERICA
1946 CAMPUS DRIVE
HYDE PARK, NY 12538**

Prepared for; Patrick Miller, Manager-Engineering Operations

Sean Moran, Roofing Innovations, LLC
Date: July 7, 2015



Introduction

A comprehensive infrared moisture survey, utilizing a FLIR E60 Camera, and subsequent visual condition assessment, was completed for the Culinary Institute of America, located at 1946 Campus Drive, Hyde Park, NY 12538. As a comment, The FLIR infrared scanning device works on a principal of locating thermal (heat) gain achieved during day's with direct sunlight warming/heating the membrane and transferring the heat gain into the existing insulation located below the membrane. During evening hours, the dry insulation releases the heat gain, the wet areas of insulation retain the thermal gain – the IR Camera records/identifies the difference in temperatures, which translates to areas identified as having wet insulation.

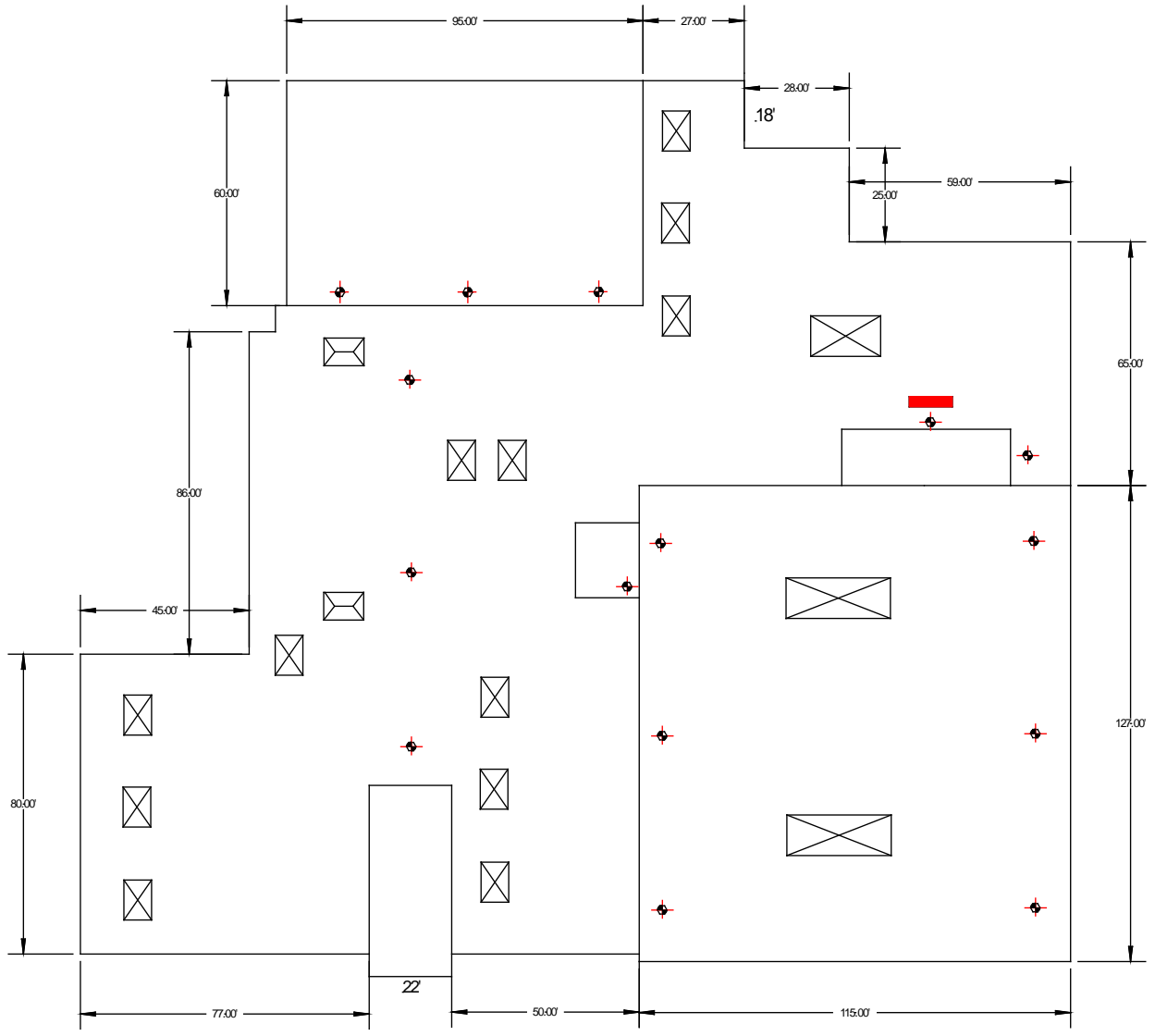
The infrared survey was performed on Thursday, June 18, 2015. Weather conditions were ideal with plenty of sunshine during the day, with temperatures in the low 80's, with nighttime temperatures dropping into the upper 50's. The purpose of this inspection was to identify the extent, if any, of moisture infiltration into the existing roof assembly, document observed deficiencies, determine overall condition of the existing roof system and to estimate the remaining service life of the in-place roof assembly.

The existing roof system, noted at all roof areas, is a fully adhered .060 non-reinforced EPDM membrane.

The roof's all possessed marginal to adequate slope, some ponding area(s) were noted in random areas.

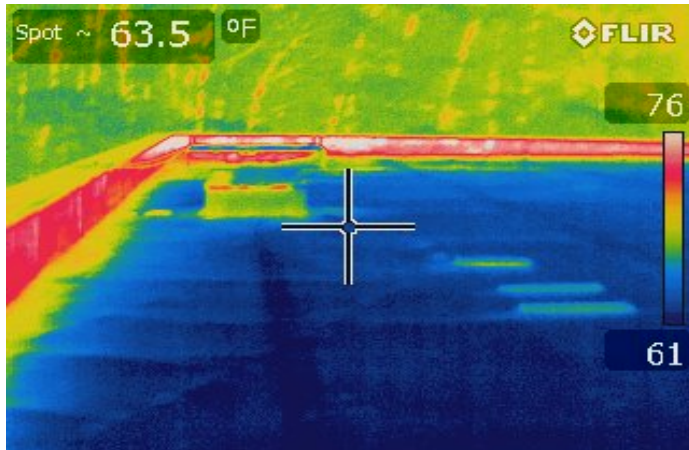
Please reference the Roof Inspection Summary, attached rooftop drawing and Photograph Documentation for additional information pertaining to this roof inspection.

Roof measures approximately 51,300 ft², and represents an asset value (replacement cost) of \$923,400.00 (+/-) based on today's replacement(s) cost(s).

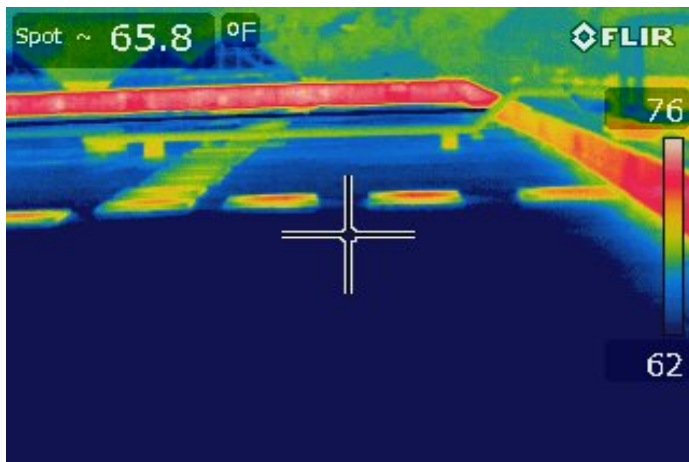


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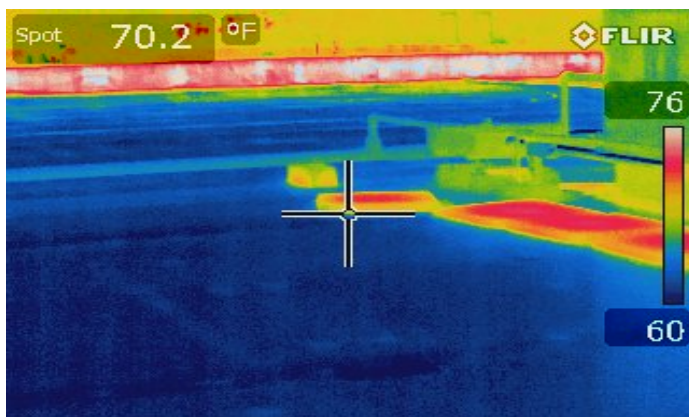
IR PHOTO DOCUMENTATION



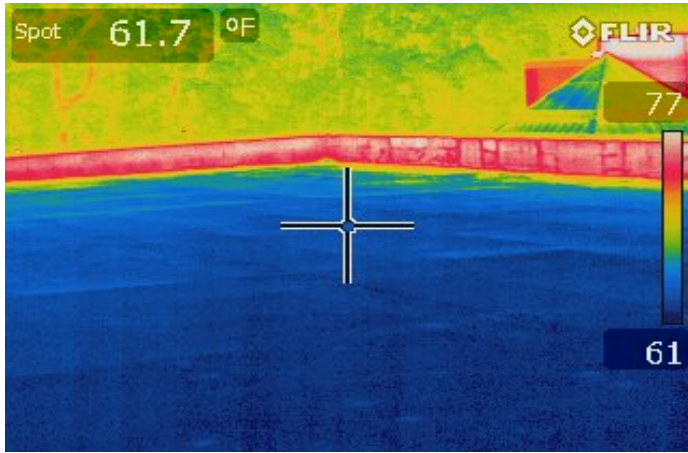
T1 - UPPER ROOF AREA...NO ANAMOLIES NOTED



T2 - ADDITIONAL VIEW...

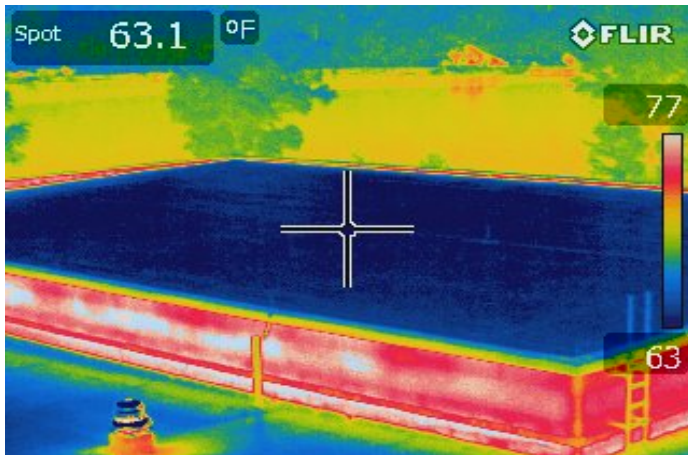


T3 - ADDITIONAL VIEW...

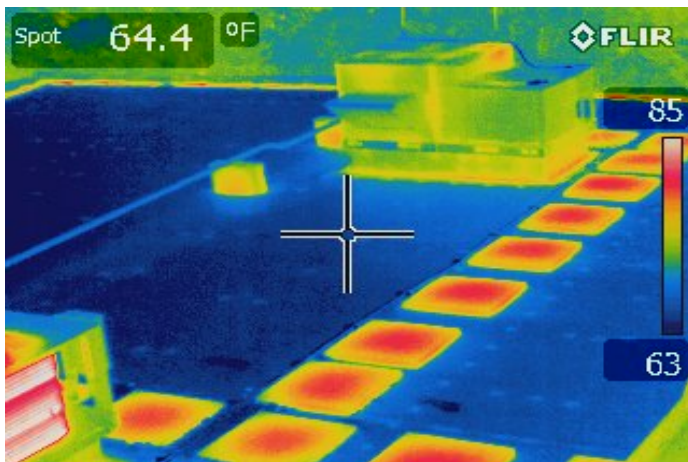


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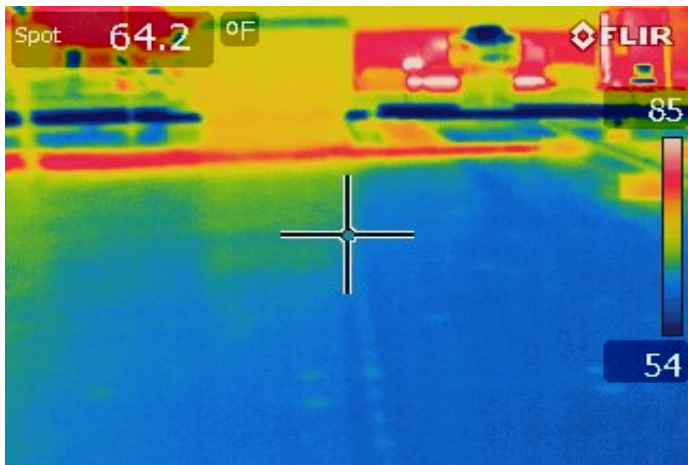
T4 – ADDITIONAL VIEW OF UPPER AREA...



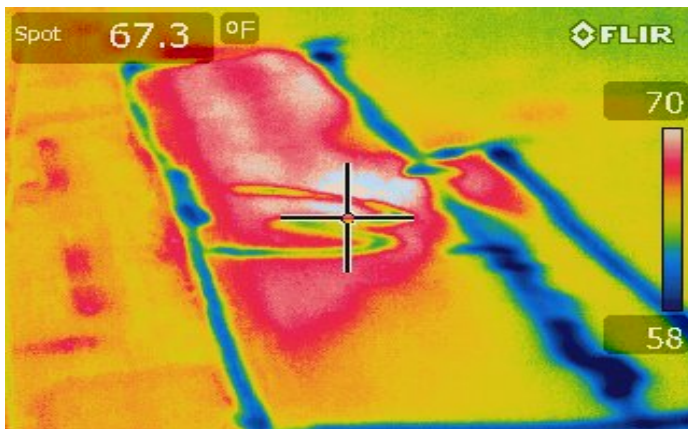
T5 – BUMP UP AREA REVEALED NO ANAMOLIES...



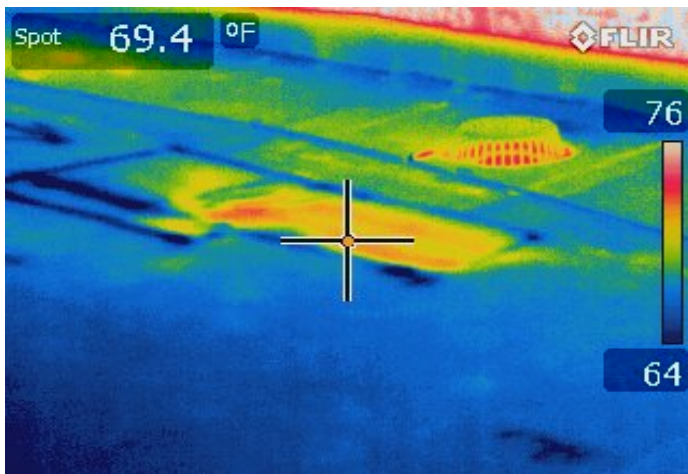
T6 – DRY...



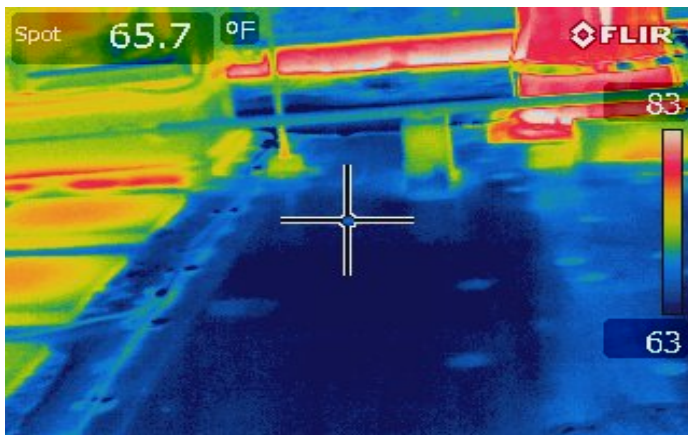
T7



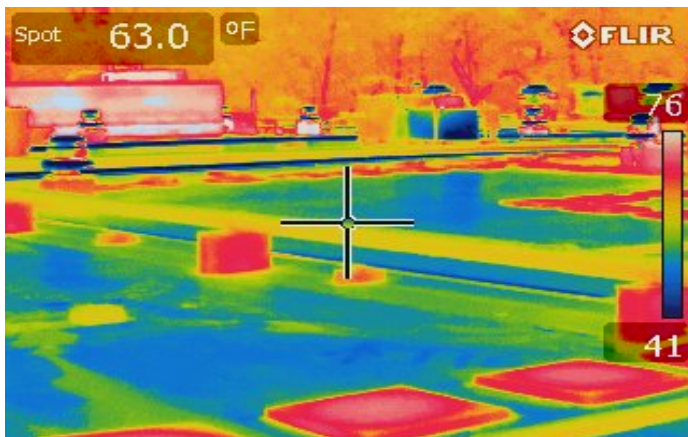
T8 – VIEW OF WET INSULATION NOTED NEAR DRAIN ASSEMBLY



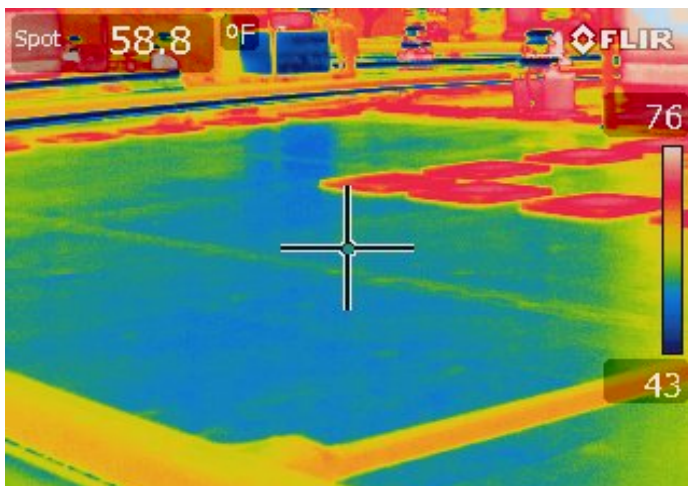
T9 – ADDITIONAL VIEW...



T-10 – AREA(S) NEAR ALL UNITS WERE CHECKED...AGAIN, NO WET INSULATION NOTED



T11 – DRY...



T12 – DRY...

DAY TIME IMAGES



VIEW OF WET AREA NOTED AT DRAIN LOCATION...



ADDITIONAL VIEW...



VIEW FROM UPPER ROOF AREA LOOKING DOWN...



OVERALL VIEW FROM UPPER ROOF AREA...



UPPER ROOF AREA...



POSSIBLE SOURCE OF WATER ENTRY AT UPPER ROOF AREA...FASCIA DOES NOT EXTEND BEYOND SOLDIER COURSE OF BRICK

Recommendations:

The overall condition of these roof areas is average for the current time-frame. As you know, Patrick, roofs can degrade rather quickly if left unattended to. For example, the area(s) of insulation as noted currently, will continue to grow if no remedial work is performed.

In the short-term, I recommend area(s) where wet insulation is noted be repaired by removal and replacement in-kind.

Additionally, where the soldier course of brick is “bumped-out” more pronounced than the surrounding area, (where the active leaks are occurring) an extender piece of metal should be fabricated and installed. The profile of the new metal will extend beyond and over the soldier course of brick a minimum of 1.5”. I’m thinking roughly 5 sections (50’ of metal) to be installed in the area(s) that are currently leaking as a trial run. If the leaking is stopped, we can proceed with completing the balance if the recommended upgrade is approved.

These are the first step(s) for the near term.

Approximate required Budget; \$3,500+/-

For the longer term, consider the following;

1. Completely wash existing EPDM roof mat (assuming existing conditions have been repaired/rectified with remedial work – including metal extender piece on the Upper Roof Area) with environmentally friendly cleaner until membrane is “Jet-Black”. Allow to dry.
2. Strip-in all seams, joints, T-Joints and laps with polyester matting and specified high-performance gray base-coat of roof coating. Allow to dry.
3. Apply specified high-strength, liquid applied roofing membrane. White coating with aged emissivity of .90. Ten (10) Year Warranty to be issued upon project completion to The CIA.
4. Remove any un-used equipment
5. Require periodic and/or full-time inspection/monitoring of the project as provided by the Roof Consultant
6. Generate pro-active maintenance program that includes inspection twice a year, spring and fall, and after every major storm.

Approximate Budget Cost; \$5.00 per square foot, or, \$256,500.00(+/-) based on a total roof area of 51,300ft².

Benefits of Restoration v. Tear-Off and Replacement for The Culinary Institute of America:

1. No roof removal, translates to no exposure to the elements, which always *potentially* represents water infiltration into the facility via fast moving storms, tie-ins between the old/new roofing assemblies, damage to existing roof cover etc.
2. Limited disruption to equipment, operations and staff unlike complete removal, which represents cutting, scraping, banging etc., to remove existing roof cover and in general, can potentially represent a very disruptive process.
3. No debris entering facility through openings in the deck via curbs, penetrations and drains.
4. Although not a reason for recommending roof restoration, an additional benefit in the avoidance of a full tear-off and roof replacement, based on 51,000(+/-) square feet, which would represent a capital expenditure of nearly \$867,000.00(+/-) for replacement versus roof restoration represents a total expenditure of +/--\$256,000.00+/- This represents a savings of nearly \$611,000+/-
5. Identifiable sources of water entry will be addressed at time of roof restoration. 80% of all sources of water entry in any facility is associated with the perimeter, base flashings, penetrations and all associated details. All these items are being replaced and/or corrected in the scope-of-work being performed.
6. Restoration process will receive full Ten (10) year warranty as provided for all material and labor.
7. True sustainability and green – will not fill up land fills with insulation, EPDM Membrane (which takes decades to degrade) etc.

If a project(s) is to move forward, the remaining steps would include;

- Completion of roof plan drawings, showing the location, dimension and detailing for all rooftop equipment for all areas where roof work to commence.
- Completion and review of drawings for flashing details at rooftop equipment, location of walk ways etc.

- Establishing contractor safety requirements, material storage site, protection of manufacturing/production areas, protection of personnel and interior assets.
- Completion of technical specifications and bid documents including all lump-sum and unit pricing schedules.
- Scheduling and conducting a mandatory, onsite, pre-bid walk-through meeting with selected roofing contractors.
- Bid review, contractor interviewing, submittal reviews, reference verifications and proposed project scheduling.
- Pre-construction conference, coordination review, weekly meeting schedules permitting and bonding/insurance compliance, project staging etc.
- Project commencement/start-up
- Project monitoring/progress meeting and reports
- Issuance of Ten (10) Year Warranty upon project close-out

Once you've had time to digest the above information, Patrick, I would like to answer any questions you may have.

Warmest regards,

Sean Moran

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