

1 WHEREUPON,

2 STANLEY ALAN MORAIN

3 WAS CALLED AS A WITNESS, AND, HAVING BEEN FIRST DULY SWORN,  
4 WAS EXAMINED AND TESTIFIED AS FOLLOWS:

5 THE COURT: YOU MAY INQUIRE, MR. MC MANUS.

6 MR. MC MANUS: THANK YOU, SIR.

7 DIRECT EXAMINATION

8 BY MR. MC MANUS:

9 Q. WOULD YOU STATE YOUR NAME, SIR?

10 A. STANLEY ALAN MORAIN.

11 Q. AND YOUR ADDRESS?

12 A. [REDACTED], NORTHEAST, ALBUQUERQUE,  
13 NEW MEXICO.

14 Q. AND DO YOU HAVE A PROFESSION, SIR?

15 A. YES, SIR, I DO.

16 Q. I AM A GEOGRAPHER, PH. D., DOCTOR OF GEOGRAPHY,  
17 AND I ALSO TEACH AT THE UNIVERSITY OF NEW MEXICO.

18 Q. COULD YOU GIVE ME A RESUME OF YOUR EDUCATIONAL  
19 BACKGROUND AND TRAINING, SIR?

20 A. I TOOK MY UNDERGRADUATE DEGREE AT THE UNIVERSITY  
21 OF CALIFORNIA, RIVERSIDE, IN 1963; A PH. D. AT THE UNIVERSITY  
22 OF KANSAS IN 1970, BOTH IN THE FIELD OF GEOGRAPHY.

23 I TAUGHT AT THE UNIVERSITY OF KANSAS BETWEEN 1970  
24 AND 1974 AS AN ASSISTANT PROFESSOR.

25 I ALSO HELD AN APPOINTMENT THERE AS A RESEARCH ASSOCIATE

1 AT AN ORGANIZATION CALLED THE CENTER FOR RESEARCH, INCORPORATED.

2 IN 1974, I MOVED TO ALBUQUERQUE, WHERE I HOLD A JOINT  
3 APPOINTMENT WITH THE GEOGRAPHY DEPARTMENT AS AN ASSOCIATE  
4 PROFESSOR OF GEOGRAPHY, AND I AM ALSO THE DIRECTOR OF AN  
5 ORGANIZATION KNOWN AS TECHNOLOGY APPLICATION CENTER AT  
6 THE UNIVERSITY.

7 Q. WHAT IS THE TECHNOLOGY APPLICATION CENTER?

8 A. TAC, AS IT IS REFERRED TO, IS IN THE BUSINESS  
9 OF PUBLIC SERVICE. THE PRIMARY GOAL OF THE ORGANIZATION  
10 IS TO ASSIST THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
11 IN THE TRANSFER OF SPACE-RELATED TECHNOLOGIES.

12 Q. AND YOU ARE TEACHING NOW, SIR; IS THAT CORRECT?

13 A. THAT IS CORRECT.

14 Q. AND IS THIS TO REGULAR UNIVERSITY STUDENTS?

15 A. YES, SIR.

16 Q. AND IS THAT ON THE UNDERGRADUATE LEVEL?

17 A. BOTH, GRADUATE AND UNDERGRADUATE.

18 Q. AND WHAT ARE THE SUBJECTS THAT YOU TEACH?

19 A. I TEACH A SEQUENCE OF COURSES IN AIR-PHOTO INTER-  
20 PRETATION AND REMOTE SENSING, WHICH IS A TERM USED TO DESCRIBE  
21 IMAGES OTHER THAN THOSE ACQUIRED BY A NORMAL CAMERA.

22 AND I ALSO HAVE A SEMINAR IN REMOTE SENSING.

23 I TEACH, IN ADDITION TO THAT, A COURSE IN SOILS. THE  
24 TITLE OF IT IS SOIL GEOGRAPHY. IT HAS TO DO WITH SOIL  
25 GENETICS AND SOIL DISTRIBUTION.

1 I TEACH A COURSE IN HISTORICAL BIOGEOGRAPHY.

2 Q. AND WHAT DOES THAT INVOLVE?

3 A. ESSENTIALLY, THE EVOLUTIONARY HISTORY OF MAMMALS  
4 FOR THE LAST 70 MILLION YEARS AND OF ANGIOSPERMS, THE FLOWERING  
5 PLANTS.

6 Q. AND DO YOU HAVE A TITLE OR RANK AT THE UNIVERSITY  
7 OF NEW MEXICO?

8 A. TWO, ACTUALLY. I AM AN ASSOCIATE PROFESSOR  
9 AND DIRECTOR OF THE TECHNOLOGY APPLICATION CENTER.

10 Q. ALL RIGHT.

11 DOCTOR, COULD YOU EXPLAIN BASICALLY -- THIS MIGHT  
12 SEEM LIKE A SIMPLE QUESTION, SIR, BUT WHAT IS GEOGRAPHY,  
13 AND WHAT DOES THE STUDY OF GEOGRAPHY ENTAIL?

14 A. THAT IS A GOOD QUESTION, BECAUSE MOST OF US HAVE  
15 HAD SOME KIND OF GEOGRAPHY CLASS IN OUR GRADE SCHOOL, OR  
16 HIGH SCHOOL, OR SOMEWHERE ALONG THE LINE.

17 BUT UNIVERSITY GEOGRAPHY IS NOT THE USUAL, WHAT WE  
18 NORMALLY THINK OF AS THE CAPITALS OF STATES, AND THE LENGTHS  
19 OF THE RIVERS, AND THAT SORT OF THING.

20 BUT, RATHER, MODERN, PROFESSIONAL GEOGRAPHY HAS TO  
21 DO WITH THE PATTERNS THAT WE OBSERVE ON THE LANDSCAPE,  
22 AND THE EVOLUTION OF THOSE PATTERNS.

23 AND GEOGRAPHY CAN BE, AND OFTEN IS, DIVIDED INTO TWO  
24 MAJOR SUBDISCIPLINES.

25 ONE IS REFERRED TO AS PHYSICAL GEOGRAPHY, WHICH IS

1 THE PART THAT I AM MOST FAMILIAR WITH, AND THAT HAS TO  
2 DO WITH LAND FORMS, SOILS, VEGETATION, AND AGRICULTURE,  
3 THAT KIND OF PHENOMENA.

4 AND THE OTHER, MAJOR SUBDISCIPLINE IS CULTURAL GEOGRAPHY.  
5 AND THE PEOPLE WHO PRACTICE THAT ARE PRIMARILY INVOLVED  
6 WITH CULTURES AROUND THE WORLD.

7 Q. AND WHAT IS YOUR AREA OF CONCENTRATION IN THE  
8 FIELD OF GEOGRAPHY?

9 A. MY AREA IS -- MY PRIMARY AREAS ARE IN SOIL GEOGRAPHY  
10 AND PLANT GEOGRAPHY, AND I MIGHT GO ONE STEP FURTHER AND  
11 SAY, WITHIN THAT, I AM INTERESTED IN THE EVOLUTION OF SOILS:  
12 HOW THEY GOT TO BE THE WAY THEY ARE.

13 Q. HAVE YOUR STUDIES BEEN LIMITED TO THE UNITED STATES, AND  
14 THE GEOGRAPHIC TERRAIN OF THE UNITED STATES?

15 A. NO, SIR.

16 I HAVE SPENT CONSIDERABLE TIME IN OTHER PARTS OF THE  
17 WORLD, IN THAILAND, IN THE PHILIPPINES, PAKISTAN. I HAVE  
18 BEEN THROUGHOUT MOST OF THE COUNTRIES OF CENTRAL AMERICA.  
19 AND MOST RECENTLY, WITHIN THE LAST YEAR OR TWO YEARS, I  
20 HAVE BEEN GOING MORE FREQUENTLY TO AFRICA, THE NORTHERN  
21 PARTS OF AFRICA.

22 Q. WHAT WOULD YOU BE DOING, FOR EXAMPLE, IN THAILAND?

23 A. AS A MATTER OF FACT, I WAS THERE FOR A TRAINING  
24 PROGRAM IN SATELLITE SENSING, THE INTERPRETATION OF PHOTOGRAPHS -  
25 WELL, I SHOULD SAY IMAGES, BECAUSE THEY ARE NOT TAKEN BY

1 A CAMERA, THE INTERPRETATION OF SATELLITE IMAGES.

2 AND MY SPECIFIC TASK IN THAT REGARD WAS WITH REGARD  
3 TO AGRICULTURE.

4 Q. AND WHAT TYPES OF AGRICULTURE, SIR?

5 A. PRIMARILY RICE LAND, THE PADDY CULTURE, AS IT  
6 IS CALLED.

7 Q. IN CONJUNCTION WITH INTERPRETING THE IMAGE DATA,  
8 DID YOU ALSO DO FIELD WORK ON THE GROUND?

9 A. YES, SIR.

10 AS PART OF THIS TRAINING PROGRAM, IT WAS REQUIRED  
11 OF US TO TAKE THE PARTICIPANTS, MOST OF WHOM WERE WITHIN  
12 ROYAL THAI GOVERNMENT AGENCIES, CORRESPONDING, LET'S SAY,  
13 TO OUR OWN SOIL CONSERVATION SERVICE AND DEPARTMENT OF  
14 AGRICULTURE -- WE HAD TO TAKE THESE PEOPLE INTO THE FIELD  
15 WITH THE IMAGES AND TRAIN THEM TO UNDERSTAND THE PATTERNS  
16 THEY WERE LOOKING AT AND HOW THOSE PATTERNS APPEAR ON THE  
17 IMAGES.

18 Q. AND WHAT DO YOU MEAN WHEN YOU TALK ABOUT "PATTERNS"?

19 A. OH, I AM TALKING PRIMARILY ABOUT THE SIZE, SHAPE, AND  
20 ARRANGEMENT OF FIELD BORDERS; THE INTERPRETATION OF WHAT  
21 IS GROWING IN THE FIELD AT THE TIME, AND OTHER PHYSICAL  
22 FEATURES SUCH AS THAT.

23 OUTSIDE OF THE AGRICULTURE AREA, OR THE AREA DEVOTED  
24 TO AGRICULTURE, WE WOULD BE LOOKING AT THE FORESTS, AND  
25 THE DISTRIBUTION OF FORESTS, THE DISTRIBUTION OF CLEARED

1 LAND, AND OTHER -- IN SHORT, WHATEVER PEOPLE DO ON THE  
2 GROUND TO ALTER THE NATURAL APPEARANCE OF THE LANDSCAPE.  
3 THOSE ARE THE PATTERNS WE ARE LOOKING AT.

4 Q. AND WOULD THAT INCLUDE A STUDY OF THE RELATIONSHIP  
5 BETWEEN SOIL AND VEGETATION IN ANY PARTICULAR AREA?

6 A. DEFINITELY. DEFINITELY.

7 Q. DO YOU HAVE ANY PUBLICATIONS IN THE FIELD OF  
8 GEOGRAPHY?

9 A. YES, I HAVE A NUMBER OF THEM.

10 Q. WELL, LET ME -- I AM NOT ASKING YOU TO MEMORIZE  
11 THEM, SIR. I WOULD LIKE TO SHOW YOU WHAT HAS BEEN MARKED  
12 AS PLAINTIFFS' EXHIBIT 88.

13 I FIRST WOULD ASK YOU IF YOU CAN IDENTIFY THAT, SIR?

14 A. YES.

15 THIS IS A COPY OF A RESUME. I BELIEVE YOU CALL IT  
16 A C. V.

17 Q. AND IS THERE A LISTING OF PUBLICATIONS?

18 A. YES.

19 I THINK THIS VERSION HAS -- LISTS THE -- IT IS DATED  
20 APRIL, 1981, AND IT HAS LISTED ONLY THE TEN MOST RECENT  
21 OF THE PUBLICATIONS THAT I HAVE.

22 Q. AND COULD YOU GIVE ME THE TITLES OF JUST ONE  
23 OR TWO OF THOSE, SIR?

24 A. JUST ONE OR TWO?

25 Q. YES, SIR.

1 A. THE THIRD ONE DOWN IS BY ME AND DR. WACHARAKITTI,  
2 WHO HAPPENS TO BE A -- I AM TRYING TO REMEMBER IF HE IS --  
3 I THINK HE IS A FORESTER, TEACHING IN BANGKOK.

4 THE TITLE OF IT IS, "PROCEDURES FOR LAND USE ANALYSIS  
5 IN DEVELOPING COUNTRIES: EXAMPLES FROM SOUTHEAST ASIA."

6 THE NEXT ONE AFTER THAT IS BY MYSELF, WITH DR. RICHARD  
7 HOOLEY, WHO USED TO BE AT THE UNIVERSITY OF PITTSBURGH.  
8 AND DR. ROGER HOFFER, WHO IS AT PURDUE UNIVERSITY.

9 THAT ONE IS TITLED, "ESTIMATING AGRICULTURAL PRODUCTION  
10 BY THE USE OF SATELLITE INFORMATION."

11 Q. THANK YOU, SIR. THAT IS SUFFICIENT.

12 A. ALL RIGHT.

13 Q. YOU MENTIONED THAT YOU DEAL WITH AIR-REMOTE SENSING  
14 AND AIR-PHOTO INTERPRETATION.

15 COULD YOU EXPLAIN THAT, SIR?

16 A. WELL --

17 Q. IS THERE A NAME FOR THAT FIELD?

18 A. WELL, THERE IS A SOCIETY, THE AMERICAN SOCIETY  
19 OF PHOTOGRAMMETRY. ACTUALLY, YOU SEE, PEOPLE HAVE SO MANY  
20 REASONS FOR ANALYZING PHOTOGRAPHS THAT, GENERALLY, ONE HAS  
21 TO HAVE A SOLID BACKGROUND IN ONE OF THE TRADITIONAL DISCIPLINES  
22 AND, IN ADDITION TO THAT, THEY UTILIZE AERIAL PHOTOGRAPHY  
23 AND MEASUREMENTS FROM THOSE PHOTOGRAPHS TO ASSIST IN THE  
24 ANALYSIS OF THEIR OWN DISCIPLINE.

25 SO, AS FAR AS I AM CONCERNED, I UTILIZE PHOTOGRAPHS

1 TAKEN EITHER FROM LOW-, MEDIUM-, OR HIGH-ALTITUDE AIRCRAFT,  
2 OR I USE SATELLITE PHOTOGRAPHS AND SATELLITE IMAGES TO  
3 PROVIDE ME WITH, IF YOU WILL, A BIRD'S-EYE VIEW OF WHAT  
4 THOSE PATTERNS ON THE GROUND ARE THAT I AM TRYING TO MEASURE,  
5 SIR.

6 Q. ALL RIGHT.

7 YOU MENTIONED THE AMERICAN SOCIETY OF PHOTOGRAMMETRISTS?

8 A. YES. IT IS THE AMERICAN SOCIETY OF PHOTOGRAMMETRY.

9 Q. PHOTOGRAMMETRY.

10 A. THAT IS CORRECT.

11 Q. ARE ITS MEMBERS CALLED PHOTOGRAMMETRISTS?

12 A. I SUPPOSE IN A LOOSE SORT OF WAY THEY ARE. THERE  
13 IS A CERTIFICATION PROGRAM WITHIN THE SOCIETY, AND I BELIEVE  
14 THERE ARE -- WELL, THE SOCIETY HAS SOME 5000 OR 6000 MEMBERS  
15 NOW, AND I THINK -- I COULD BE WRONG -- THERE MAY BE 300  
16 OR 400 OF THOSE WHO ARE REFERRED TO AS CERTIFIED PHOTOGRAMMETRISTS

17 Q. OKAY.

18 AND WHAT IS THE PROCESS FOR CERTIFICATION?

19 A. THIS IS NOT A LEGAL LICENSING PROGRAM; BUT, RATHER,  
20 IT WAS RECOGNIZED ABOUT FIVE OR SIX YEARS AGO THAT THE  
21 FIELD WAS GROWING SO FAST THAT SOME FORM OF RECOGNITION  
22 NEEDED TO BE PROVIDED TO THOSE WHO HAD CONSIDERABLE EXPERIENCE,  
23 SHALL I SAY.

24 SO THE CERTIFICATION PROGRAM CONSISTS OF DOCUMENTING  
25 YOUR EXPERIENCE, YOUR EDUCATION, YOUR PUBLICATIONS, AND

1 THERE IS ALSO A CODE OF ETHICS INVOLVED WITH IT.

2 ONCE THIS APPLICATION, IF YOU WILL, IS SUBMITTED TO  
3 THE SOCIETY, IT IS THEN SENT OUT FOR REVIEW TO THE CERTIFICATION  
4 COMMITTEE.

5 YOUR REFERENCES ARE CHECKED THEN, SIR. THAT IS TO SAY,  
6 PEOPLE WHO KNOW YOUR WORK ARE CONTACTED AND ASKED FOR THEIR  
7 EVALUATION.

8 Q. HAVE YOU HELD ANY POSITIONS WITH THE AMERICAN  
9 SOCIETY OF PHOTOGRAMMETRY?

10 A. YES, SIR.

11 AT THE PRESENT TIME I AM THE CHAIRMAN OF THE EDUCATION  
12 COMMITTEE FOR THE SOCIETY.

13 I AM A PAST PRESIDENT OF THE RIO GRANDE CHAPTER OF  
14 THE SOCIETY.

15 I AM WHAT THEY REFER TO AS THE CORRESPONDENT TO COMMISSION  
16 VI OF THE INTERNATIONAL SOCIETY OF PHOTOGRAMMETRY. COMMISSION  
17 VI HAS TO DO WITH EDUCATION.

18 Q. ALL RIGHT.

19 A. AND THERE ARE A FEW OTHER POSITIONS THAT I HAVE  
20 HELD.

21 Q. HOW LONG HAVE YOU BEEN ASSOCIATED WITH THE AMERICAN  
22 SOCIETY OF PHOTOGRAMMETRY?

23 A. OH, AS A DUES-PAYING MEMBER, I WOULD THINK 1970,  
24 ROUGHLY, 1970.

25 AS A PARTICIPANT IN MEETINGS AND OTHER SUCH FUNCTIONS,

1 I HAVE BEEN INVOLVED SINCE ABOUT 1965.

2 Q. NOW, SIR, IS THERE AN OVERLAP BETWEEN YOUR APPLICATION  
3 OF YOUR EXPERTISE IN GEOGRAPHY AND PHOTOGRAMMETRY?

4 A. WELL, IN MY MIND THERE IS NO SEPARATION. MANY  
5 OF THE KINDS OF STUDIES AND MEASUREMENTS THAT I MAKE CANNOT  
6 BE DONE EASILY WITHOUT SUCH IMAGES.

7 IF I MIGHT JUST ADD ONE OTHER THING, IT MIGHT HELP  
8 YOU TO UNDERSTAND GEOGRAPHERS A LITTLE BIT BETTER.

9 THE PREFACE TO ONE OF THE CLASSIC INTRODUCTORY TEXTBOOKS  
10 TO GEOGRAPHY BY DRS. FINCH AND TRAWORTH, IN THE PREFACE  
11 THEY MAKE THE COMMENT THAT GEOGRAPHERS ARE SORT OF LIKE  
12 ANTS ON A PERSIAN RUG.

13 PRIOR TO PHOTOGRAPHY, THESE ANTS WERE MOVING AROUND  
14 ON THE RUG, AND THEY SPENT ALL OF THEIR TIME LEARNING  
15 BY MAKING OBSERVATIONS AND MAKING MAPS.

16 THEY WERE TRYING TO LEARN WHAT THE PATTERN WAS.

17 GEOGRAPHY HAS NOW PROGRESSED TO THE STAGE OF WANTING  
18 TO DESCRIBE THE EVOLUTION OF THAT PATTERN; NOT JUST WHAT  
19 THE PATTERN IS, BUT HOW IT GOT TO BE THAT WAY.

20 AND, OF COURSE, OUR JOB IS MADE MUCH MORE EASY THESE  
21 DAYS WITH PHOTOGRAPHS AND SATELLITE IMAGES.

22 MR. MC MANUS: YOUR HONOR, AT THIS TIME I WOULD  
23 TENDER DR. MORAIN AS AN EXPERT IN THE FIELDS OF GEOGRAPHY  
24 AND PHOTOGRAMMETRY, AND AS THEY ARE INTERRELATED.

25 MR. DUBUC: YOUR HONOR, CAN WE APPROACH THE BENCH

1 ON THE SCOPE OF HIS EXPERTISE?

2 THE COURT: YES. LADIES AND GENTLEMEN, IF YOU  
3 WOULD BE MORE COMFORTABLE WITH A STRETCH, PLEASE BE MY  
4 GUEST.

5 ( AT THE BENCH )

6 THE COURT: ALL RIGHT.

7 MR. DUBUC: YOUR HONOR, I WOULD NOT HAVE ANY  
8 OBJECTION TO HIM ON THE PHOTOGRAMMETRY -- HE IS A MEMBER  
9 OF THIS GROUP -- IN MEASUREMENT AND ANALYSIS.

10 IN THE COURSE OF HIS DEPOSITION, AND, TO SOME  
11 EXTENT, IN THE PROFFER, THERE WAS A SUGGESTION THAT HE  
12 IS GOING TO TESTIFY ON PLANT PHYSIOLOGY AND THAT SORT OF  
13 THING.

14 I BELIEVE HE SAID -- AND I WAS JUST LOOKING FOR  
15 IT -- IN HIS DEPOSITION THAT THAT IS NOT AN AREA OF HIS  
16 EXPERTISE.

17 AND I HOPE HE IS NOT GOING TO GET INTO THAT,  
18 BUT THERE HAS BEEN SOME PROFFER OF THAT.

19 THE COURT: I HEARD HIM SAY SOME THINGS THAT  
20 INDICATED HE WAS. HE WAS TALKING ABOUT ADVISING ABOUT  
21 SOIL AND VEGETATION AND CROPS.

22 MR. DUBUC: WELL, THERE ARE SOIL AND PLANTS,  
23 AND THEN THERE IS THE CHEMICAL PROCESS OF PLANT DETERIORATION.  
24 I THINK THAT IS WHAT WE ARE TALKING ABOUT.

25 IN OTHER WORDS, IF SOMETHING IS ON A PLANT

1 AND IT STARTS TO GO, I DON'T THINK THAT IS HIS AREA.

2 THE COURT: YOU ARE SPINNING IT TOO FINE FOR  
3 ME, MR. DUBUC.

4 IS THAT YOUR OBJECTION?

5 MR. DUBUC: YES.

6 THE COURT: ALL RIGHT. IT IS OVERRULED.

7 ( OPEN COURT )

8 MR. MC MANUS: YOUR HONOR, AT THIS TIME I WOULD  
9 LIKE TO OFFER PLAINTIFFS' EXHIBIT 88, DR. MORAIN'S RESUME,  
10 INTO EVIDENCE.

11 THE COURT: WELL, LET ME SAY THAT YOUR PROFFER  
12 OF THE WITNESS AS AN EXPERT IS APPROVED.

13 MR. MC MANUS: I AM SORRY, SIR. I DIDN'T HEAR.

14 THE COURT: YOUR PROFFER IS APPROVED.

15 MR. MC MANUS: YES, SIR.

16 THE COURT: I HAVE OVERRULED THE OBJECTION.

17 MR. MC MANUS: YES, SIR. I UNDERSTOOD THAT,  
18 AND I WOULD JUST MERELY LIKE TO OFFER --

19 THE COURT: ALL RIGHT. GO AHEAD.

20 MR. MC MANUS: (CONTINUING) -- PLAINTIFFS' EXHIBIT  
21 88 INTO EVIDENCE.

22 MR. DUBUC: NO OBJECTION.

23 THE COURT: WITHOUT OBJECTION, IT IS RECEIVED.

24 THE CLERK: PLAINTIFFS' EXHIBIT NO. 88 IS RECEIVED  
25 IN EVIDENCE.

3 BY MR. MC MANUS:

4 Q. DR. MORAIN, YOU HAVE BEEN ASKED TO SERVE AS A  
5 CONSULTANT IN CONNECTION WITH THE CRASH OF THE C-5A OCCURRING  
6 ON APRIL 4, 1975, NEAR SAIGON; IS THAT CORRECT, SIR?

7 A. THAT'S CORRECT.

8 Q. AND WERE YOU ASKED TO PERFORM TASKS CONCERNING  
9 THAT CRASH?

10 A. YES, SIR, I WAS.

11 Q. AND WHAT ARE THOSE, SIR?

12 A. I WAS ASKED TO REVIEW PHOTOGRAPHS FOR PURPOSES  
13 OF MAKING MEASUREMENTS OF CERTAIN FEATURES ON THE GROUND:  
14 LINEATIONS, TRACKS, TO MAKE MEASUREMENTS OF DISTANCES ON  
15 BOTH THE EAST SIDE AND ON THE WEST SIDE OF THE SAIGON RIVER.

16 I WAS ASKED TO TO LOOK INTO THE QUESTION OF THE SOILS,  
17 AND THE NATURE OF THE SOILS ALONG THAT PATHWAY.

18 AND I WAS ALSO ASKED TO LOOK AT THE CONDITION OF THE  
19 VEGETATION, SPECIFICALLY WITH REGARD TO ONE COMPONENT OF  
20 THAT SCENE. IT IS CALLED THE TROOP COMPARTMENT, I BELIEVE,  
21 SIR.

22 Q. ALL RIGHT.

23 A. SO I HAD THOSE THREE MAIN TASKS.

24 Q. AND IN COMPLETING THOSE TASKS, DID YOU MAKE USE  
25 OF VARIOUS PHOTOGRAPHS AND MOTION PICTURES?

1 A. THAT IS CORRECT. I DID. THERE WERE --

2 Q. AND -- EXCUSE ME. I DIDN'T MEAN TO CUT YOU  
3 OFF.

4 A. I WAS JUST GOING TO SAY: I NEVER COUNTED THEM,  
5 BUT THERE WERE NUMEROUS COLOR AND BLACK-AND-WHITE PHOTOGRAPHS,  
6 AS WELL AS A MOTION PICTURE.

7 Q. BY "NUMEROUS," CAN YOU GIVE ME JUST A BALLPARK  
8 ESTIMATE, SIR?

9 A. WELL, IT IS HARD FOR ME, BECAUSE SO MANY OF THEM  
10 LOOK ALIKE. BUT I WOULD SAY THERE MUST HAVE BEEN 100  
11 OR SO COLOR PHOTOGRAPHS, AND AT LEAST THAT MANY BLACK-  
12 AND-WHITES.

13 THE BLACK-AND-WHITES MAY HAVE BEEN TAKEN FROM THE  
14 COLOR. I DON'T KNOW.

15 Q. AND FROM THAT BODY OF PHOTOGRAPHS, DID YOU SELECT  
16 SOME THAT WOULD BETTER ENABLE YOU TO EXPLAIN YOUR TASKS?

17 A. I SELECTED A NUMBER OF BLACK-AND-WHITE PHOTOGRAPHS  
18 AS THE PRIMARY BASIS FOR MAKING MEASUREMENTS, IN CONJUNCTION  
19 WITH SOME OTHER DOCUMENTATION.

20 AND I HAVE ALSO UTILIZED FEWER SUCH PHOTOGRAPHS IN  
21 COLOR TO MAKE MY DETERMINATIONS ON THE CONDITION OF THE  
22 VEGETATION AROUND THE TROOP COMPARTMENT.

23 Q. ALL RIGHT.

24 NOW, DOCTOR, IN CONJUNCTION WITH THE FIRST OF YOUR  
25 TASKS, TO MAKE MEASUREMENTS, DID YOU CREATE A CHART THAT

1 LAYS OUT THE MEASUREMENTS THAT YOU MADE?

2 A. YES, I DID. AND IT IS BASICALLY A REVISION  
3 OF A CHART THAT HAD ALREADY BEEN PREPARED.

4 Q. DOCTOR, I WOULD LIKE TO SHOW YOU WHAT HAS BEEN  
5 MARKED PLAINTIFFS' EXHIBIT 248 AND ASK YOU, SIR, IF THIS  
6 IS A CHART THAT YOU PREPARED?

7 A. YES, SIR, IT IS.

8 Q. DR. MORAIN, I WOULD LIKE TO ASK YOU, WITH THE  
9 COURT'S PERMISSION, TO STEP DOWN AND EXPLAIN THE CHART,  
10 AND HOW YOU MADE THE MEASUREMENTS, TO ME, SIR.

11 A. MAY I?

12 THE COURT: BY ALL MEANS.

13 MR. DUBUC: YOUR HONOR, I WOULD JUST LIKE TO  
14 NOTE HERE, IN PRESENTING THE CHART, OF COURSE, DR. MORAIN  
15 IS PRESENTING HIS OPINION AS TO THE MEASUREMENTS.

16 SO I GATHER WE ARE TALKING ABOUT THE CHART AS  
17 HIS OPINION.

18 AND I AM NOT SURE WHETHER HE HAS THE FOUNDATION  
19 AT THIS POINT.

20 WE HAD THE CHART THE OTHER DAY, AND I DON'T KNOW  
21 IF MR. MC MANUS IS GOING TO LET US KNOW HOW HE GOT TO THIS,  
22 AND I JUST WANTED TO RAISE THAT POINT.

23 MR. MC MANUS: I AM GOING TO ASK HIM HOW HE ARRIVED AT  
24 AND THEN ASK HIS OPINION, SIR.

25 THE COURT: VERY WELL.

1 MR. DUBUC, IF YOU ALL WOULD LIKE TO COME DOWN  
2 HERE, YOU ARE WELCOME TO DO SO.

3 MR. DUBUC: THANK YOU, YOUR HONOR.

4 THE COURT: DOCTOR, IS THERE ANY WAY YOU CAN  
5 ARRAY YOURSELF, SO I CAN SEE, TOO?

6 THE WITNESS: IS THIS BETTER?

7 THE COURT: THAT WOULD BE FINE. YOU HAVE AN  
8 AUDIENCE THAT RANGES FROM THERE TO THERE. JUST WIDEN  
9 YOUR LENS.

10 THE WITNESS: YES, SIR.

11 THE BACKGROUND OF THIS CHART IS IDENTICAL WITH  
12 A DIAGRAM THAT HAD ALREADY BEEN PREPARED. I DON'T KNOW  
13 THE SOURCE OF THAT DIAGRAM.

14 I UNDERSTAND THAT IT WAS A MILITARY DIAGRAM.

15 AND THE SCALE HERE IS 175 YARDS. SO EACH ONE  
16 OF THESE SQUARES IS 175 YARDS.

17 THE COURT: MR. MC MANUS, WOULD YOU LIKE TO BE  
18 SOMEWHERE ELSE?

19 MR. MC MANUS: IF I AM NOT BLOCKING THE JURY'S  
20 VIEW, I THINK I CAN SEE FROM HERE, SIR. THANK YOU, YOUR  
21 HONOR.

22 THE COURT: ALL RIGHT.

23 THE WITNESS: NORTH, AS IS TRADITIONAL, POINTS  
24 UPWARD, AND THIS IS THE EAST, AND THIS IS THE WEST. THE  
25 SAIGON RIVER RUNS THROUGH HERE.

1 THE COURT: WHY DON'T YOU JUST SIT IN THAT CHAIR,

2 MR. LEWIS?

3 MR. LEWIS: YES, YOUR HONOR.

4 THE WITNESS: AND THE EVIDENCE ON THE GROUND  
5 IS THAT THE AIRCRAFT TOUCHED ON SEVERAL PLACES ALONG THE  
6 GROUND ON THE EAST SIDE OF THE RIVER.

7 AND THEN WE PICK UP MORE EVIDENCE ON THE WEST  
8 SIDE OF THE RIVER, BEGINNING AT ABOUT THIS POINT.

9 AND THERE ARE SOME RATHER LONG LINEATIONS THAT  
10 WERE LEFT BY THE AIRCRAFT, AND THEN WE PICK UP THE TROOP  
11 COMPARTMENT, WHICH IS LOCATED IN THIS POSITION.

12 THERE IS ANOTHER PIECE OF THE AIRCRAFT. I THINK  
13 IT IS REFERRED TO AS THE FLIGHT DECK. I OFTENTIMES SAY  
14 "CREW COMPARTMENT."

15 I AM NOT -- I DON'T DRAW A DISTINCTION.

16 AND THEN THE WING, AND THE BURN PATTERN AROUND  
17 THE WING, IS LOCATED ON THE CHART HERE.

18 AND WHAT I DID WAS, AS IS TYPICAL IN THESE KINDS  
19 OF ANALYSES, I FOUND OBJECTS IN THE PHOTOGRAPHS THAT I  
20 COULD GET DIMENSIONS FOR.

21 AND, USING THOSE KNOWN DIMENSIONS, ONE COULD  
22 THEN UNDERTAKE A SERIES OF PROPORTIONAL MEASUREMENTS TO  
23 MEASURE THE ITEMS OF SPECIFIC INTEREST.

24 NOW, ON THE EAST SIDE OF THE RIVER, FRANKLY,  
25 THE ONLY ITEM THAT WAS OF IMMEDIATE INTEREST, AND MEASURABLE,

1 WAS THIS INITIAL IMPACT, OR THIS INITIAL LINEATION THAT  
2 WE SEE HERE.

3 AND THAT WAS MEASURED BY MEANS OF -- AND I HAVE  
4 SOME PHOTOGRAPHS.

5 BY MR. MC MANUS:

6 Q. WOULD THOSE BE OF ASSISTANCE TO YOU, SIR? WOULD  
7 YOU LIKE ME TO SHOW THOSE AT THE SAME TIME, OR IS IT EASIER  
8 FOR YOU TO GO THROUGH THE CHART AND THEN USE THE PHOTOGRAPHS?

9 A. WHY DON'T I SUMMARIZE THIS FOR JUST A MINUTE  
10 OR TWO, AND THEN WE CAN GO BACK AND SHOW SOME OF THE PHOTO-  
11 GRAPHS.

12 Q. ALL RIGHT.

13 A. MY POINT IS THAT I ONLY MEASURED THIS ONE FEATURE  
14 ON THE EAST SIDE OF THE RIVER.

15 ON THE WEST SIDE OF THE RIVER, I MEASURED THE LENGTH  
16 OF THIS LINEATION.

17 I, THEN, MEASURED THE DISTANCE OF THIS TROOP COMPARTMENT  
18 FROM THE WEST BANK OF THE RIVER BY USING SOME ADDITIONAL  
19 INFORMATION HERE REGARDING THIS CANAL WALKWAY.

20 I MEASURED THE DISTANCE OF THE T-TAIL FROM THE WEST  
21 BANK AND ALSO THE CREW COMPARTMENT.

22 AND I MEASURED THE LENGTHS OF THESE LINEATIONS THAT  
23 TRAIL EASTWARD FROM THE AFT END OF THIS TROOP COMPARTMENT.

24 SO, BASICALLY, I HAVE TRIED TO MEASURE THE LENGTHS  
25 OF THESE LINEATIONS AND THE DISTANCES OF THE MAJOR COMPONENTS

1 OF THE WRECKAGE FROM THE WEST BANK OF THE RIVER.

2 AND, FROM THAT, WE THEN MADE SOME ADDITIONAL MEASUREMENTS  
3 BY SUBTRACTION WITH REGARD TO SOME OTHER FEATURES ON THE  
4 SCENE.

5 NOW, DOES THAT --

6 Q. YES.

7 ARE THERE SOME PHOTOGRAPHS THAT WOULD ASSIST YOU IN  
8 THE GENERAL EXPLANATION OF THIS CHART, SIR?

9 A. YES, THAT IS CORRECT.

10 Q. ALL RIGHT.

11 A. ARE THOSE THE ONES?

12 Q. YES.

13 NOW, HAVE YOU ARRANGED THOSE IN ANY PARTICULAR ORDER?

14 A. YES, SIR.

15 THESE ARE ARRANGED IN THE SAME ORDER THAT I HAVE THEM  
16 IN THE REPORT THAT I HAVE PREPARED.

17 Q. SIR, AS YOU EXPLAIN THE PHOTOGRAPH, COULD YOU  
18 PLEASE READ THE NUMBER, THE PLAINTIFFS' EXHIBIT NUMBER,  
19 SO THE EXHIBIT CAN BE IDENTIFIED FOR THE RECORD?

20 A. OKAY.

21 THE FIRST PHOTOGRAPH IS PLAINTIFFS' EXHIBIT 1000-110.  
22 AND THIS WAS A USEFUL PHOTOGRAPH TO ME.

23 I SHOULD SAY THAT I AM NOW DEALING WITH THE MEASUREMENTS  
24 ON THE EAST SIDE OF THE RIVER.

25 THERE IS A TIRE IN THE CORNER OF THIS FIELD, THE

1 DIMENSIONS FOR WHICH I CAN GET OFF OF A DIAGRAM --

2 Q. ALL RIGHT.

3 A. (CONTINUING) -- OF THE C-5A.

4 Q. DO YOU RECALL WHAT THAT DIMENSION WAS?

5 A. ON THE DIAGRAM?

6 Q. YES.

7 A. YES. IT IS GIVEN AS 3.75 FEET.

8 Q. THANK YOU, SIR.

9 A. ONCE I KNOW THE DIMENSION OF THIS TIRE, I CAN  
10 THEN SCALE THE LENGTH OF THIS DIKE.

11 I MIGHT SAY THAT THIS IS ALL RICE LAND IN HERE. THESE  
12 ARE RICE PADDIES. AND AT THIS TIME OF THE YEAR, WHAT WE  
13 ARE LOOKING AT HERE IS RICE STUBBLE.

14 BUT THERE IS A DIKE THAT RUNS ALONG HERE, AND THAT  
15 DIKE IS INTENDED TO RETAIN WATER, SO THAT THE RICE CAN  
16 GROW.

17 IF I, THEN, TURN TO THE NEXT PHOTOGRAPH, THAT IS  
18 PLAINTIFFS' EXHIBIT 1000-56.

19 THIS BORDER, I CAN LOCATE ON THIS PHOTOGRAPH, AND  
20 IT HAPPENS TO BE THIS FIELD BORDER RIGHT HERE.

21 AND ON THIS PHOTOGRAPH, NOW, WE CAN SEE THE TRACK  
22 OF THE -- OR PATH, THE PATHWAY, ALONG WHICH THE C-5A APPARENTLY  
23 TRAVELED.

24 MY ULTIMATE INTENTION IN MAKING THESE MEASUREMENTS  
25 IS TO GET THE LENGTH OF THIS FIELD, BECAUSE THIS LINE RIGHT

1 HERE IS THAT INITIAL TRACK.

2 Q. ALL RIGHT.

3 A. THAT IS THIS LINEATION, AND I WANT TO FIND OUT  
4 WHAT THE LENGTH OF THAT IS.

5 SO, BASICALLY, WHAT I HAD TO DO WAS FIND OUT THE LENGTH  
6 OF THIS; AND, FOR CONFIRMATION, I THEN FOUND IT ON ANOTHER  
7 PHOTOGRAPH.

8 AND HERE, IN ITS ENTIRETY, IS THAT INITIAL TRACK.

9 Q. AND WHAT IS THE NUMBER OF THAT PHOTOGRAPH, SIR?

10 A. OH, I AM SORRY. THIS IS PLAINTIFFS' EXHIBIT  
11 1000-66.

12 Q. I WILL HOLD THOSE FOR YOU.

13 A. THANK YOU.

14 AND BY PROPORTIONAL MEASUREMENTS FROM THOSE PHOTOGRAPHS,  
15 I ARRIVED AT A LENGTH OF ABOUT 100 FOR THAT INITIAL TOUCHDOWN.

16 Q. ALL RIGHT.

17 A. ON PLAINTIFFS' EXHIBIT 1000-99, YOU GET A FAIRLY  
18 NICE RENDITION OF THAT TRACK.

19 THE COURT: WHAT WAS THE NUMBER?

20 THE WITNESS: 1000-99.

21 THE COURT: THANK YOU. ARE YOU STILL TALKING  
22 ABOUT THAT 110-FOOT TRACK?

23 THE WITNESS: YES, SIR.

24 THE COURT: ALL RIGHT.

25 THE WITNESS: IT WAS ALSO FROM THIS IMAGE, 1000-99,

1 THAT I MEASURED THE DEPTH OF THAT TRACK BY USING SOME SHADOWS  
2 AND WHAT NOT.

3 IT IS FAIRLY OBVIOUS THAT THAT IS A TIRE TRACK.

4 ON EXHIBIT 1000-80, I DIDN'T REALLY USE THIS  
5 IMAGE AT ALL, EXCEPT THAT IT GIVES ME SOME PERSPECTIVE  
6 FROM GROUND LEVEL. IT IS NOT AN AERIAL PHOTOGRAPH.

7 AND IMAGE 1000-98 GIVES ME THE SAME TRACK, BUT  
8 IT IS IN THE MIDDLE DISTANCE OF THIS PHOTOGRAPH.

9 SO THOSE ARE THE ONES THAT I USED, IN CONJUNCTION  
10 WITH ALL OF THE MEASUREMENTS REGARDING THIS INITIAL TOUCHDOWN,  
11 SIR.

12 NOW, ON THE WEST SIDE OF THE RIVER, I ALSO NEEDED  
13 TO FIND SOME OBJECT WHOSE DIMENSIONS I COULD MEASURE. AND,  
14 IN THAT INSTANCE, THIS T-TAIL SEGMENT OF THE AIRCRAFT TURNED  
15 OUT TO BE THE MOST USEFUL.

16 AGAIN, THE DIMENSION I ARRIVED AT FOR THE T-TAIL  
17 CAME OFF OF A DOCUMENT THAT WAS A DRAWING OF THE C-5A,  
18 GIVING DIMENSIONS OF VARIOUS PARTS.

19 I ALSO UTILIZED IN ANOTHER CONTEXT THE HEIGHTS  
20 OF SOME OF THE PEOPLE IN THESE PHOTOGRAPHS.

21 BASED ON MY EXPERIENCE WITH SOUTHEAST ASIAN PEOPLE  
22 AND THEIR AVERAGE HEIGHTS, I ASSUMED THAT THE AVERAGE HEIGHT  
23 FOR A TYPICAL VIETNAMESE PERSON MIGHT BE A LITTLE OVER  
24 FIVE FEET, FIVE-FOOT-TWO, FIVE-FOOT-THREE, SOMETHING LIKE  
25 THAT.

1 I AM REFERRING TO PLAINTIFFS' EXHIBIT 1000-26.

2 I ALSO UTILIZED, INDEPENDENTLY OF ANY AIRCRAFT  
3 DIMENSIONS, OR ANY OTHER FEATURES THAT I COULD SEE IN THE  
4 PHOTOGRAPHS, I ALSO UTILIZED AN ARMY TOPOGRAPHIC COMMAND  
5 MAP THAT, AT A SCALE OF 1 TO 50,000, ALLOWED ME TO MAKE  
6 DIRECT MEASUREMENTS FROM THE MAP AND USE THOSE AS A MECHANISM  
7 TO SCALE THE FEATURES IN THE IMAGES.

8 SO I REALLY HAD TWO INDEPENDENT MEASUREMENTS  
9 FOR SOME OF THESE FEATURES.

10 AND THE ONE THAT TURNED OUT TO BE THE MOST USEFUL,  
11 IN TERMS OF GETTING DISTANCES FROM THE WEST BANK OF THE  
12 RIVER, WAS THIS CANAL WALKWAY.

13 BECAUSE I COULD MEASURE THE WIDTH OF THE RIVER  
14 OFF OF THAT ARMY TOPOGRAPHIC COMMAND MAP.

15 THAT MAP ALSO SHOWED THE LOCATION OF THIS WALKWAY,  
16 AND IT SHOWED THE LOCATION OF THIS WALKWAY.

17 AND, BY PROPORTIONAL MEASUREMENTS, I COULD GET  
18 INDEPENDENT MEASUREMENTS OF WHERE THESE WERE, AND THEN  
19 I COULD ALSO MEASURE THEM FROM THE PHOTOGRAPHS.

20 BY MR. MC MANUS:

21 Q. ALL RIGHT.

22 A. DO YOU WANT ME TO GO THROUGH ALL OF THESE?

23 Q. WELL, IF ANY OF THEM CAN ASSIST YOU IN EXPLAINING  
24 YOUR WRECKAGE DIAGRAM, YES, SIR.

25 A. OKAY.

1 Q. IF THEY DO NOT ASSIST YOU IN PARTICULARLY EXPLAINING  
2 THE WRECKAGE DIAGRAM, NO, SIR.

3 A. OKAY.

4 THEN, ON PLAINTIFFS' EXHIBIT 1000-83, THERE ARE SOME  
5 VERY DISTINCT MARKS HERE.

6 I AM NOT SURE THAT EVERYBODY CAN SEE WHAT I AM POINTING  
7 TO. THERE IS A DRAINAGEWAY HERE, A CANAL DRAINAGEWAY, AND  
8 THIS IS ALSO A DRAINAGEWAY.

9 BUT THIS LINE, WHICH IS FILLED WITH WATER, WAS LEFT  
10 BY THE AIRCRAFT, ITSELF.

11 AND PLAINTIFFS' EXHIBIT 1000-86 SHOWS YOU THE FULL  
12 EXTENT OF THAT TRACK, WHICH, AS ONE CAN SEE HERE, DOES  
13 NOT BEGIN RIGHT AT THE WEST BANK OF THE RIVER, BUT SOME  
14 DISTANCE INTO THIS ADJACENT FIELD.

15 SO THE QUESTION WAS:

16 HOW LONG IS THAT TRACK?

17 Q. SIR, JUST SO WE ARE CLEAR ON PLAINTIFFS' EXHIBIT  
18 1000-86, IN THE CENTER OF THE PICTURE THERE ARE, WHAT APPEAR  
19 TO BE, TWO AREAS FILLED WITH WATER.

20 A. YOU ARE REFERRING TO THIS, AS WELL AS THIS?

21 Q. YES, SIR.

22 NOW, THE ONES ON THE RIGHT WERE TRACKS LEFT BY THE  
23 AIRCRAFT. IS THAT WHAT YOU SAID, SIR?

24 A. YES, THAT IS CORRECT.

25 Q. AND THE ONES ON THE LEFT?

1 A. THE ONES ON THE LEFT ARE NATURAL DRAINAGE CANALS.  
2 WELL, THEY ARE NOT NATURAL. THEY ARE MAN-MADE.

3 Q. BUT THOSE WERE NOT -- THOSE ON THE LEFT WERE  
4 NOT THE TRACKS LEFT BY THE AIRCRAFT?

5 A. NO. NO. NO. NO. NO.

6 Q. ALL RIGHT.

7 A. PLAINTIFFS' EXHIBIT 1000-112 SHOWS IN BETTER  
8 PERSPECTIVE THIS TROOP COMPARTMENT AND TWO WELL-DEFINED  
9 TRACKS LEADING INTO THE BACK END OF THAT.

10 AND THAT WOULD BE THESE TRACKS HERE, AND ITEM D ON  
11 MY DIAGRAM, WHICH, BY MEASUREMENT, COME OUT TO BE 165 FEET.

12 AND THIS MEASUREMENT IS BASED ON THE LENGTH OF THE  
13 TROOP COMPARTMENT AS GIVEN IN THE DIAGRAM OF THE C-5A.

14 I WAS ABLE TO SCALE THIS AT 65 FEET FROM THE DIAGRAM, AND  
15 THEN TO MAKE PROPORTIONAL MEASUREMENTS OF THE LENGTHS OF  
16 THESE TRACKS.

17 PLAINTIFFS' EXHIBIT 1000-117 SHOWS THE SAME THING AT  
18 A SLIGHTLY DIFFERENT PERSPECTIVE, WITH TRACKS LEADING BACK  
19 EASTWARD FROM THE TROOP COMPARTMENT.

20 PLAINTIFFS' EXHIBIT 1000-42 SHOWS THE AFT END OF THE  
21 TROOP COMPARTMENT.

22 AND, AGAIN, USING A DIAGRAM OF THE AIRCRAFT, ITSELF,  
23 I OBTAINED A MEASUREMENT OF THIS DISTANCE, BECAUSE I WAS  
24 INTERESTED IN FINDING OUT, IF I COULD, HOW DEEP THESE TRACKS  
25 MIGHT BE.

1 PLAINTIFFS' EXHIBIT 1000-10 IS STILL ANOTHER  
2 PERSPECTIVE THAT SHOWS A PATHWAY LEADING INTO THAT AFT  
3 END OF THE TROOP COMPARTMENT.

4 AND PLAINTIFFS' EXHIBIT 1000-72 SHOWS ANOTHER  
5 PERSPECTIVE. THIS IS STILL THE AFT END OF THE TROOP  
6 COMPARTMENT. AND SOME OF THOSE TRACKS.

7 NOW, THE RESULT OF THOSE MEASUREMENTS IS THAT  
8 I HAVE -- WELL, THIS INITIAL TOUCHDOWN ON THE WEST SIDE  
9 OF THE RIVER WAS MEASURED AT APPROXIMATELY 500 FEET.

10 THE LENGTHS OF THE TRACKS LEADING INTO THE TROOP  
11 COMPARTMENT, TO THE AFT END OF THE TROOP COMPARTMENT, ARE  
12 APPROXIMATELY 165 FEET.

13 I HAVE ALSO MEASURED THE DISTANCE FROM THE TROOP  
14 COMPARTMENT TO THE WINGS, THE WING AREA, AND THAT IS GIVEN  
15 AS 360 FEET, ROUGHLY.

16 AND THE DISTANCE FROM THE TROOP COMPARTMENT TO THE  
17 SORRY -- THE LENGTH OF THE TRACK LEADING TO THE CREW  
18 COMPARTMENT, WHICH IS THIS ITEM E, IS GIVEN AS 450 FEET,  
19 MORE OR LESS.

20 THE DISTANCE, AS TAKEN FROM THE ARMY TOPOGRAPHIC  
21 COMMAND MAP --

22 BY MR. MC MANUS:

23 Q. EXCUSE ME, SIR. CAN YOU STOP RIGHT THERE?

24 A. OH, YES. SIR.

25 Q. IS THIS A COPY OF THE MAP THAT YOU USED, SIR.

1 REFERRING TO PLAINTIFFS' EXHIBIT 3-H?

2 A. I DIDN'T ACTUALLY USE THIS COPY, BUT I USED  
3 THIS MAP.

4 Q. ALL RIGHT.

5 A. THIS IS A COLOR PHOTOGRAPH OF THE MAP. I DIDN'T  
6 NEED A COLOR PHOTOGRAPH. I JUST USED A XEROX COPY OF THE  
7 MAP. YOU HAVE A --

8 THE COURT: YOU HAVE ANSWERED THE QUESTION.

9 THE WITNESS: THE IMPORTANT THING --

10 THE COURT: GO AHEAD.

11 THE WITNESS: THE IMPORTANT THING TO REMEMBER  
12 ABOUT THIS ARMY TOPOGRAPHIC COMMAND MAP IS THAT ALL MAPS  
13 PRODUCED BY AGENCIES IN THE UNITED STATES MUST MEET WHAT  
14 ARE KNOWN AS NATIONAL MAPPING ACCURACY STANDARDS.

15 THIS MAP WAS NOT PRODUCED BY SOMEBODY WHO JUST  
16 SAT DOWN AND DREW A WAVY LINE AND CALLED IT A RIVER. THIS  
17 MAP WAS PRODUCED FROM HIGH-QUALITY PHOTOGRAPHS, WITH  
18 GEOMETRICALLY CONTROLLED GROUND POINTS.

19 EVERYTHING THAT IS SHOWN ON THIS MAP IS IN ITS  
20 TRUE POSITION ON EARTH, WITHIN A MATTER OF A FOOT OR TWO,  
21 AT THIS SCALE, A 1-TO-50,000 SCALE.

22 NOW, A 1-TO-50,000 SCALE IS CONSIDERED TO BE A  
23 MEDIUM-SCALE MAP.

24 THAT IS TO SAY, BY COMPARISON, IF I WERE DEALING  
25 WITH A SCALE OF 1 TO 10,000, THAT WOULD BE A VERY LARGE-SCALE

1 MAP.

2 AND A 1-TO-ONE-MILLION-SCALE MAP WOULD BE A VERY  
3 SMALL-SCALE MAP AND WOULD SHOW YOU LESS DETAIL.

4 SO AT 1 TO 50,000, EVERY POINT ON THIS MAP IS  
5 WITHIN A FEW FEET OF WHERE THE MAP SAYS IT IS. IT IS NOT  
6 JUST SCRIBBLING THAT SOMEBODY MADE.

7 SO I MEASURED THE POSITION OF THIS CANAL WALKWAY  
8 AS ABOUT 1150 FEET, OR 1155 FEET, THEREABOUTS. AND THAT  
9 WOULD BE THIS LITTLE WALKWAY HERE.

10 AND THEN THERE IS ANOTHER ONE HERE THAT I MEASURED  
11 AS 1990 FEET. IT WOULD BE THIS ONE.

12 BY MR. MC MANUS:

13 Q. OKAY.

14 A. I DON'T KNOW WHAT ELSE MIGHT BE OF INTEREST TO  
15 YOU.

16 Q. DOCTOR, LET ME ASK YOU THIS, SIR:

17 YOU MENTIONED THAT YOU HAD USED SOME DIAGRAMS OF THE  
18 C-5A FOR SOME OF YOUR CALCULATIONS.

19 I WOULD LIKE TO SHOW YOU DEFENDANTS' EXHIBIT D-1216,  
20 AND ASK YOU IF THAT IS ONE OF THE DOCUMENTS THAT YOU USED,  
21 SIR?

22 A. YES, IT IS. THIS DOCUMENT IS THE ONE FROM WHICH  
23 I EXTRACTED THE TIRE DIAMETER, AND IT IS GIVEN HERE AT THREE-  
24 FEET-NINE-INCHES, WHICH IS 3.75 FEET.

25 SO, IF I RECALL, THIS IS THE ONLY DIMENSION I EXTRACTED

1 FROM THE DIAGRAM, THE TIRE DIMENSION.

2 Q. DID YOU USE THIS DOCUMENT?

3 A. OH, SORRY.

4 Q. IN REFERENCE TO THE T-TAIL?

5 A. YES. YES. SORRY. I DID.

6 THE PART OF THE TAIL THAT IS RECOGNIZABLE ON THE GROUND  
7 IS THIS PORTION HERE; AND SINCE THEY DON'T ACTUALLY GIVE  
8 ME THAT DIMENSION ON THE DIAGRAM, I HAD TO CALCULATE A  
9 DIMENSION.

10 I BELIEVE IT WAS 34-1/2 FEET.

11 THE ENTIRE HEIGHT OF THE AIRCRAFT IS GIVEN ON THIS  
12 DIAGRAM AS 65 FEET AND ONE INCH, AND I HAD TO SUBTRACT OFF  
13 THAT PART BELOW THE AFT END OF THE FUSELAGE.

14 Q. SIR, I WOULD LIKE TO SHOW YOU WHAT HAS BEEN MARKED  
15 AS DEFENDANTS' EXHIBIT D-1217, AND ASK YOU IF YOU USED THAT  
16 DOCUMENT IN ANY OF YOUR CALCULATIONS?

17 A. YES, SIR, I DID.

18 THE TROOP COMPARTMENT IS THIS SO-CALLED COMPARTMENT E  
19 ON THIS PARTICULAR DIAGRAM, AND I COULD, BY PROPORTIONAL  
20 MEASUREMENTS, EXTRACT THE LENGTH OF THIS BY COMPARISON TO  
21 THE OVERALL LENGTH OF THE AIRCRAFT, WHICH IS GIVEN DOWN  
22 HERE.

23 MY ANSWER TO THAT ONE WAS 65 FEET.

24 THE COURT: MR. MC MANUS, WE WILL HAVE TO  
25 ADJOURN AND RECONVENE AT 9:30 MONDAY MORNING.

1 MR. MC MANUS: YOUR HONOR, ON THIS PARTICULAR  
2 PORTION OF HIS TASK, I ONLY HAVE ONE OR TWO MORE QUESTIONS.

3 THE COURT: WELL, YOU CAN ASK ONE OR TWO MORE  
4 QUESTIONS MONDAY MORNING.

5 MR. MC MANUS: YES, SIR.

6 THE COURT: LADIES AND GENTLEMEN, WE ARE GOING  
7 TO ADJOURN NOW.

8 I APPRECIATE YOUR ATTENTION. I APPRECIATE YOUR  
9 FAITHFULNESS TO MY INSTRUCTIONS, AND I LOOK FORWARD TO SEEING  
10 YOU AT 9:30 MONDAY MORNING.

11 MR. DUBUC: YOUR HONOR, COULD WE APPROACH THE  
12 BENCH FOR JUST A SECOND?

13 THE COURT: LET ME JUST FINISH MY INSTRUCTIONS.  
14 DOES EVERYBODY HAVE THIS NUMBER STRAIGHT NOW?

15 (THE JURORS INDICATED AFFIRMATIVELY.)

16 THE COURT: ALL RIGHT.

17 ( AT THE BENCH )

18 THE COURT: JUST A MOMENT. MR. MC MANUS IS NOT  
19 HERE.

20 YES, SIR.

21 MR. DUBUC: I DON'T KNOW WHAT YOU WANT TO TELL  
22 THEM ABOUT WATCHING STUFF.

23 THE COURT: WELL, I THOUGHT ABOUT IT., I DON'T  
24 WANT TO BAIL OUT THE OCEAN. I DON'T WANT TO BAIL OUT THE  
25 OCEAN.

1 THE COURT: GOOD MORNING, LADIES AND GENTLEMEN.

2 BEFORE WE BEGIN, I WANT TO INVITE ANY ONE OF  
3 YOU WHO OVER THE WEEKEND HAS HAD SOMETHING COME TO HIS  
4 OR HER ATTENTION WHICH THE JUROR THINKS MIGHT MAKE IT DIFFICULT  
5 FOR THAT JUROR TO TRY THIS CASE ON THE BASIS OF THE EVIDENCE  
6 AS IT IS ADDUCED IN COURT, RIGHT HERE, AND THE LAW AS I  
7 INSTRUCT YOU ON IT, TO COME TO THE BENCH.

8 I TAKE IT BY YOUR SILENCE THAT NONE HAS ANY SUCH  
9 INFORMATION TO COMMUNICATE.

10 RECALL YOUR WITNESS.

11 MR. MC MANUS: YES, YOUR HONOR.

12 I WOULD ASK THAT DR. MORAIN RETAKE THE STAND,  
13 YOUR HONOR.

14 THE COURT: VERY WELL.

15 WHEREUPON,

16 STANLEY ALAN MORAIN

17 RESUMED THE STAND, AND, HAVING BEEN PREVIOUSLY DULY SWORN,  
18 WAS EXAMINED AND TESTIFIED FURTHER, AS FOLLOWS:

19 THE COURT: DOCTOR, YOU ARE STILL UNDER OATH.

20 THE WITNESS: YES, SIR.

21 MR. MC MANUS: GOOD MORNING, YOUR HONOR. GOOD  
22 MORNING, LADIES AND GENTLEMEN.

23 DIRECT EXAMINATION -- (CONTINUED)

24 BY MR. MC MANUS:

25 Q. DR. MORAIN, ON FRIDAY, SIR, WE WENT OVER THREE

1 TASKS THAT YOU HAD BEEN ASKED TO COMPLETE RELATIVE TO THE  
2 CRASH OF THE C-5A.

3 COULD YOU REVIEW THOSE AGAIN, SIR?

4 A. THERE WERE THREE TASKS. THE FIRST WAS TO REVIEW  
5 A SERIES OF PHOTOGRAPHS AND MAKE MEASUREMENTS OF LINEATIONS  
6 AND OTHER MARKINGS ON THE GROUND RELATED TO THE INCIDENT.

7 Q. ALL RIGHT, SIR.

8 A. THE SECOND TASK WAS TO REVIEW THE SOILS AND THE  
9 WATER RELATIONSHIPS WITH THOSE SOILS.

10 AND THE THIRD TASK WAS TO REVIEW THE CONDITION OF  
11 THE VEGETATION, PARTICULARLY AROUND THE TROOP COMPARTMENT.

12 Q. AND WHAT WAS THE PURPOSE OF THOSE TASKS, SIR?

13 A. WELL, AS I UNDERSTAND IT, THE GROUND MEASUREMENTS,  
14 THE CONDITIONS ON THE GROUND, WERE TO BE USED BY SUBSEQUENT  
15 EXPERTS IN THE FIELD OF AERONAUTICAL ENGINEERING FOR CALCULATING  
16 VARIOUS KINDS OF FORCES AND, AS THE ENGINEERS SAY, LOADINGS  
17 ON THE AIRCRAFT, WHICH MEANS NOTHING TO ME.

18 BUT THOSE MEASUREMENTS WERE TO BE USED IN THEIR CALCULA-  
19 TIONS.

20 Q. THANK YOU, SIR.

21 NOW, ON FRIDAY WE SAW SOME PHOTOGRAPHS AND A DIAGRAM  
22 THAT YOU PREPARED CONCERNING THE CRASH SITE. DID THAT  
23 DIAGRAM SUM UP ACCURATELY THE MEASUREMENTS THAT YOU MADE  
24 CONCERNING THE VARIOUS COMPONENTS OF THE C-5A AND THE LENGTHS  
25 OF THE TRACKS ON THE CRASH SITE?

1 A. YES.

2 Q. AND I AM SPEAKING, SIR, OF PLAINTIFFS' EXHIBIT

3 248?

4 A. YES, THE REVISED DIAGRAM.

5 Q. ALL RIGHT.

6 A. ALL OF THE MEASUREMENTS I HAVE MADE ARE PORTRAYED  
7 ON THAT DIAGRAM.

8 Q. AND DID YOU ALSO PREPARE A REPORT?

9 A. YES, SIR, I DID.

10 Q. AND ARE THE SAME TYPES OF MEASUREMENTS SUMMARIZED  
11 IN YOUR REPORT?

12 A. YES.

13 THE REPORT DOCUMENTS HOW THOSE MEASUREMENTS WERE MADE;  
14 AND, REALLY, THE WRECKAGE DIAGRAM, THE REVISED DIAGRAM  
15 THAT WE WERE REFERRING TO, IS A SUMMATION, SO TO SPEAK,  
16 OF THE MEASUREMENTS CONTAINED IN THAT REPORT.

17 MR. MC MANUS: YOUR HONOR, AT THIS TIME I WOULD  
18 LIKE TO MOVE INTO EVIDENCE DEFENDANTS' EXHIBIT D-1217,  
19 DEFENDANT'S EXHIBIT D-1216, AND PLAINTIFFS' EXHIBIT 3-H.

20 THE COURT: PLAINTIFFS' EXHIBIT 3-8?

21 MR. MC MANUS: 3-H, SIR.

22 THE COURT: 3-H, ALL RIGHT.

23 MR. MC MANUS: AND THE PHOTOS THAT DR. MCRAIN REFERRED  
24 TO, PLAINTIFFS' EXHIBIT 1000-56, 1000-110, 1000-66, 1000-99,  
25 1000-80, 1000-98, 1000-83, 1000-86, 1000-122, 1000-117,

1 1000-42, 1000-72, AND 1000-10, AND ALSO PLAINTIFFS' EXHIBIT  
2 248, THE WRECKAGE DIAGRAM.

3 THE COURT: MR. DUBUC?

4 MR. DUBUC: NO OBJECTION.

5 THE COURT: THEY WILL BE RECEIVED.

6 MR. MC MANUS: THANK YOU, SIR.

7 (DEFENDANTS' EXHIBIT D-1216, DEFENDANTS'  
8 EXHIBIT D-1217, PLAINTIFFS' EXHIBIT 3-H,  
9 PLAINTIFFS' EXHIBITS 1000-56, 1000-110,  
10 1000-66, 1000-99, 1000-80, 1000-98, 1000-83,  
11 1000-86, 1000-122, 1000-117, 1000-42,  
12 1000-72, 1000-10, AND 248 WERE RECEIVED IN  
13 EVIDENCE, RESPECTIVELY.)

14 BY MR. MC MANUS:

15 Q. DR. MORAIN, DO YOU HAVE AN OPINION, SIR, WITH  
16 A REASONABLE DEGREE OF SCIENTIFIC CERTAINTY, WITH RESPECT  
17 TO THE LENGTHS AND DEPTHS OF THE TRACKS YOU HAVE DESCRIBED  
18 TO US, AND THE DISTANCES BETWEEN THE VARIOUS COMPONENTS  
19 OF THE C-5A, AS THEY ARE LOCATED AT THE CRASH SITE?

20 A. THE --

21 Q. FIRST OF ALL, SIR, DO YOU HAVE AN OPINION, WITH  
22 A REASONABLE DEGREE OF SCIENTIFIC CERTAINTY?

23 A. YES.

24 Q. AND WHAT IS THAT OPINION, SIR?

25 A. MY OPINION IS THAT THOSE COMPONENTS AND THE

1 DISTANCES, AS PORTRAYED ON THAT REVISED WRECKAGE DIAGRAM  
2 AND AS REPORTED IN MY REPORT, ARE REASONABLE IN ALL DEGREES,  
3 BASED ON THE PHOTOGRAPHS USED IN THEIR CALCULATION.

4 Q. THANK YOU, SIR.

5 NOW, YOUR SECOND TASK WAS TO DETERMINE THE NATURE  
6 OF THE SOILS AT THE CRASH SITE. COULD YOU EXPLAIN THAT,  
7 PLEASE?

8 A. THE FEATURE THAT SEEMED TO BE OF MOST INTEREST  
9 WAS THE PRESENCE OF WATER IN SOME OF THE TRACKS, PARTICULARLY  
10 THOSE ON THE WEST -- AS IT HAS GROWN TO BE CALLED, THE  
11 POINT OF FIRST TOUCHDOWN ON THE WEST SIDE OF THE RIVER.

12 THOSE TRACKS HAVE WATER IN THEM, AND, ALSO, SHOULD  
13 I BE REFERRING TO THE --

14 Q. ARE THEY THESE OVER HERE, THESE TRACKS HERE,  
15 SIR?

16 A. NO, SIR. THE ONES ON THE WEST SIDE OF THE RIVER.

17 Q. I SEE.

18 A. THOSE. CORRECT. AND ALSO THE --

19 MR. DUBUC: CAN WE HAVE A REFERENCE TO WHAT WAS  
20 JUST SHOWN THE WITNESS, YOUR HONOR?

21 MR. MC MANUS: I AM SORRY.

22 BY MR. MC MANUS:

23 Q. ARE THESE THE ONES, DOCTOR, THAT YOU ARE REFERRING  
24 TO ON THE WEST SIDE?

25 A. YES. THOSE TRACKS HAVE WATER STANDING IN THEM,

1 AND ALSO THE ONES LEADING IMMEDIATELY INTO THE TROOP COMPARTMENT  
2 HAVE WATER IN THEM.

3 Q. ALL RIGHT, SIR.

4 A. AND THE QUESTION WAS:

5 WHAT IS THE NATURE OF THE RELATIONSHIP BETWEEN THE  
6 SOILS AND THE PRESENCE OF WHAT WATER?

7 Q. AND HOW DID YOU GO ABOUT MAKING A DETERMINATION  
8 ABOUT SUCH A RELATIONSHIP?

9 A. THERE ARE, IF ONE LOOKS AT THE ENTIRE GLOBE AND  
10 THE VARIOUS CLIMATIC REGIONS AND TOPOGRAPHIC REGIONS THAT  
11 EXIST ON THE FACE OF THE GLOBE, IT IS POSSIBLE, IN A GENERAL  
12 SENSE, TO ASCERTAIN WHAT KINDS OF SOILS ARE LIKELY TO OCCUR  
13 IN THOSE REGIONS.

14 FOR EXAMPLE, THE SOILS OF, LET'S SAY, KANSAS AND IOWA  
15 ARE IN A PARTICULAR CLIMATIC REGION. THERE IS A PARTICULAR  
16 KIND OF VEGETATION THAT GROWS IN THOSE SOILS.

17 AND WE FIND THAT IN THE SOVIET UNION, IN THE SAME  
18 KIND OF CLIMATIC REGIONS AND UNDER THE SAME KINDS OF VEGETATION,  
19 ONE FINDS THE SAME KINDS OF SOILS.

20 THE SAME IS TRUE IN TROPICAL AREAS.

21 SO I HAD, JUST FROM MY BASIC BACKGROUND, SOME IDEA  
22 OF WHAT KINDS OF SOIL MIGHT BE THERE.

23 I, THEN, WENT TO AVAILABLE SOURCES, AND IN THIS PARTICULAR  
24 CASE THE FRENCH HAD PRODUCED SOME YEARS AGO A MAP OF THE  
25 DISTRIBUTION OF SOILS IN WHAT IS REFERRED TO AS THE MEKONG

1 DELTA, WHICH INCLUDES THE SAIGON AREA.

2 THAT MAP CONFIRMED WHAT ONE WOULD EXPECT TO BE IN  
3 THAT PART OF THE WORLD; AND, IN ADDITION, GAVE ME A SOIL  
4 NAME TO GO BY.

5 NOW, SOIL NAMES ARE INTERESTING, BECAUSE THEY GENERALLY  
6 CONTAIN SOME INFORMATION AS TO HOW THE SOILS GOT TO BE  
7 THAT WAY, THAT IS TO SAY, THE EVOLUTION OF THOSE SOILS.

8 AND --

9 Q. COULD I STOP YOU FOR JUST A MOMENT, SIR?

10 A. YES, SIR.

11 Q. AT THE CRASH SITE WAS THERE ANY PARTICULAR TYPE  
12 OF CROP THAT WAS EITHER GROWING AT THAT TIME, OR THAT THOSE  
13 FIELDS WERE GENERALLY USED FOR?

14 A. WELL, YES. IT IS A RICE-GROWING REGION, AND  
15 THE VERY FACT THAT THERE IS RICE GROWING THERE GIVES YOU  
16 PERHAPS THE BEST CLUE AS TO THE GENERAL NATURE OF THOSE  
17 SOILS.

18 MY RESPONSE WAS, PERHAPS, A LITTLE LENGTHY. BUT  
19 I WAS TRYING TO BRING IT FROM THE VERY GENERAL AND FOCUS  
20 IN ON THE RATHER SPECIFIC.

21 AND, AS IT TURNS OUT, RICE-GROWING AREAS IN THE SOUTHEAST  
22 ASIAN REGION HAVE CERTAIN PROPERTIES THAT ARE CHARACTERISTIC.

23 Q. DO THOSE PROPERTIES REFER TO HOW THE FIELD DEVELOPS,  
24 OR HOW THE SOIL BUILDS UP?

25 A. YES. THE GENERAL TREND OF FORMATION OF THOSE

1 SOILS IS THAT -- YOU HAVE TO REMEMBER THAT THIS IS A FLOOD  
2 PLAIN.

3 LONG BEFORE MAN WAS THERE, IT WAS A FLOOD PLAIN. AND  
4 THE INHABITANTS OF THAT REGION HAVE UTILIZED THE PROPERTIES  
5 OF THOSE SOILS:

6 NO. 1, THEY ARE POORLY DRAINED, TO BEGIN WITH.

7 Q. POORLY WHAT, SIR?

8 A. POORLY DRAINED.

9 Q. THANK YOU.

10 A. THAT IS TO SAY, THE REGION HAS SUFFICIENT RAINFALL  
11 THAT MORE WATER IS COMING IN FROM THE TOP THAN CAN BE DRAINED  
12 OUT FROM THE BOTTOM.

13 SO THERE IS A NATURAL WATER-LOGGING EFFECT THAT DEVELOPS.

14 AND WHEN THOSE LANDS ARE CLEARED AND PLACED UNDER  
15 CULTIVATION, IT IS THIS VERY PROPERTY THAT YOU SEE THAT  
16 MAKES RICE CULTIVATION POSSIBLE.

17 BECAUSE RICE REQUIRES A LOT OF WATER, STANDING WATER.

18 SO IN THE PROCESS OF CLEARING AND CULTIVATING THE  
19 LAND, THE LOCAL FARMERS HAVE BUILT DIKES AROUND FIELDS  
20 TO RETAIN WATER.

21 AND THOSE SOILS ARE ABLE TO RETAIN THAT WATER, BECAUSE,  
22 IN THE PROCESS OF THEIR FORMATION, A CLAY LAYER HAS FORMED  
23 JUST BELOW THE SURFACE, LET'S SAY, A FOOT OR SO BELOW THE  
24 SURFACE.

25 AND THAT CLAY LAYER IMPEDED THE DOWNWARD MOVEMENT

1 OF WATER.

2 IN OTHER WORDS, IT WOULD BE ROUGHLY THE SAME AS YOU  
3 OR I PUTTING A PIECE OF PLASTIC A FOOT UNDER OUR SOIL AND  
4 ALLOWING THE WATER TO BUILD UP ON TOP.

5 SO IT IS THIS CHARACTERISTIC CLAY LAYER THAT BECOMES  
6 VERY IMPORTANT.

7 AND WHEN YOU LOOK AT THESE PHOTOGRAPHS AND SEE THAT  
8 STANDING WATER IN THOSE TRACKS, WHAT IT INDICATES IS THAT  
9 AT THIS PARTICULAR TIME IN THE ANNUAL CYCLE OF RAINFALL  
10 THERE IS WATER STANDING JUST ABOVE THIS CLAY LAYER.

11 BUT THERE IS NOT ENOUGH WATER, GENERALLY SPEAKING,  
12 TO HAVE REACHED THE SURFACE. SO IT WOULDN'T BE VISIBLE  
13 OVER ALL OF THE SURFACE.

14 AND WHEN THE TRACKS WERE MADE, THE OBJECT THAT MADE  
15 THOSE TRACKS WAS ABLE TO PENETRATE DOWN THROUGH THAT MORE  
16 OR LESS DRY SURFACE LAYER, AND THEN THERE WAS THE LATERAL  
17 SEEPAGE OF WATER INTO THE TRACKS.

18 SO THE WATER IS THERE UNDER THE SURFACE. IT CAN'T  
19 BE SEEN UNTIL YOU -- IF YOU WANT TO PUT IT IN TERMS OF  
20 WHAT WE RECOGNIZE IN THIS COUNTRY, A PLOW MARK, IF YOU  
21 PUT A PLOW MARK THROUGH THAT SOIL, THEN YOU BEGIN TO SEE  
22 THE WATER.

23 Q. NOW, DOCTOR, WE HAVE SEEN SOME PHOTOGRAPHS, AND  
24 I THINK THERE ARE SOME THAT MIGHT BE HELPFUL. I WOULD  
25 LIKE TO SHOW YOU AGAIN PLAINTIFFS' EXHIBIT --

1 MR. DUBUC: YOUR HONOR, MAY WE MOVE AROUND SO  
2 THAT WE CAN VIEW THIS?

3 THE COURT: OF COURSE, MR. DUBUC.

4 BY MR. MC MANUS:

5 Q. (CONTINUING) -- PLAINTIFFS' EXHIBIT 5258.

6 MR. MC MANUS: CAN YOUR HONOR SEE THIS?

7 THE COURT: YES. I AM JUST MAKING SOME NOTES.  
8 YOU GO RIGHT AHEAD.

9 BY MR. MC MANUS:

10 Q. NOW, I BELIEVE ON FRIDAY, SIR, YOU TOLD US THAT  
11 THESE TRACKS ON THE FAR LEFT OF THE PHOTOGRAPH WERE A MAN-  
12 MADE IRRIGATION DITCH; IS THAT CORRECT?

13 A. YES, SIR.

14 Q. NOW, COULD YOU EXPLAIN, IN RELATIONSHIP TO WHAT  
15 YOU HAVE JUST BEEN TELLING US, THE WATER IN THESE TRACKS  
16 HERE?

17 A. MAY I BEGIN WITH ANOTHER MORE OR LESS GENERAL  
18 STATEMENT? THEN I WILL FOCUS IN ON THAT.

19 Q. ALL RIGHT, SIR.

20 A. THROUGHOUT MOST OF THE RICE-GROWING AREAS OF  
21 SOUTHEAST ASIA, THE LAND NEEDS TO BE IRRIGATED IN ORDER  
22 TO GET ENOUGH WATER INTO THE RICE PADDIES.

23 THAT IS TO SAY, THERE IS MORE RUNOFF, THERE IS MORE  
24 NATURAL DRAINAGE INTO THE RIVERS AND CANALS THAN THERE  
25 IS INCOMING RAIFAULL.

1 IN THIS PARTICULAR CASE, HOWEVER, AND IN THE MEKONG  
2 DELTA, IN GENERAL, IT ISN'T IRRIGATION WATER THAT IS THE  
3 MAIN MANAGEMENT PROBLEM.

4 IT IS DRAINAGE.

5 THOSE SOILS ARE WET MOST OF THE TIME.

6 SO WHEN I LOOK AT THAT PICTURE AND SEE WATER IN THOSE  
7 TRACKS --

8 Q. THESE TRACKS RIGHT HERE, SIR?

9 A. (CONTINUING) -- WHAT THAT SUGGESTS TO ME IS THAT  
10 THERE IS A GENERAL -- IF YOU COULD STRIP OFF THE SURFACE  
11 SOIL, YOU WOULD SEE WATER OVER THE ENTIRE AREA.

12 AND THOSE TRACKS, VERY SIMPLY -- THEY ARE SUFFICIENTLY  
13 DEEP THAT THEY HAVE PENTRATED INTO THAT PERCHED WATER TABLE,  
14 AS IT IS REFERRED TO, AND THE WATER IS SEEPING INTO THOSE  
15 TRACKS AND BECOMES VISIBLE.

16 Q. DOCTOR, I WOULD LIKE TO SHOW YOU PLAINTIFFS'  
17 EXHIBIT 5233.

18 I WOULD LIKE TO ASK YOU, SIR:

19 DO YOU SEE ANYTHING SIGNIFICANT ABOUT THE TRACKS IN  
20 THE WATER TABLE IN THE AREA SURROUNDING THE TROOP COMPARTMENT  
21 THE UPPER LEFT-HAND QUADRANT OF THIS PHOTO?

22 A. THERE ARE A COUPLE OF FEATURES THERE THAT I THINK  
23 ARE IMPORTANT.

24 Q. WHAT ARE THEY?

25 A. FIRST OF ALL, THAT LONG TRACK OF WATER GOING

1 UP THROUGH THE CENTER OF THE PHOTOGRAPH --

2 Q. THIS ONE?

3 A. YES, SIR, THAT ONE.

4 (CONTINUING PREVIOUS ANSWER) -- THAT IS A NATURAL  
5 DRAINAGE -- I AM SORRY -- A MAN-MADE DRAINAGE CANAL. THAT  
6 IS NOT A TRACK RELATED TO ANY OF THIS INCIDENT.

7 MOREOVER, THE WATER THAT WE SEE TO THE RIGHT OF THE  
8 PHOTOGRAPH -- AND THERE IS A HELICOPTER JUST OFF TO THE  
9 RIGHT OF THAT SPOT I AM REFERRING TO --

10 Q. HERE?

11 A. NO, DOWN TOWARD THE CENTER.

12 Q. THIS AREA HERE, SIR?

13 A. YES, THERE. YES.

14 Q. ALL RIGHT.

15 A. THAT IS ALSO WATER OF THE SAME ILK THAT I HAVE  
16 JUST BEEN DESCRIBING.

17 THERE IS WATER STANDING IN THOSE TWO LINEATIONS THAT  
18 LEAD TOWARD THE TROOP COMPARTMENT, AND THAT WATER IS BASICALLY  
19 THE SAME TYPE THAT I HAVE JUST BEEN DESCRIBING.

20 BUT THERE IS AN ADDITIONAL ATTRIBUTE ASSOCIATED WITH  
21 THAT WATER IN THAT THERE ARE OTHER PHOTOGRAPHS THAT SHOW  
22 A SLIGHT RISE AT THE -- HOW CAN I SAY IT -- NOSEWARD --

23 Q. TO THE FRONT END?

24 A. TO THE FRONT END, YES.

25 Q. BACK UP HERE?

1 A. THERE SEEMS TO BE A SLIGHT RISE THERE, AND THERE IS  
2 A TENDENCY FOR THE WATER, THE RAINWATER THAT COMES DOWN  
3 ON TO THAT, TO PERCOLATE DOWN AND THEN MOVE Laterally.

4 SO THAT WE ARE DEALING WITH NOT ONLY THE IDEA THAT  
5 SOMETHING HAS MADE SOME PLOW MARKS THERE, BUT WE ARE ALSO  
6 DEALING WITH A SOMEWHAT WETTER ENVIRONMENT, TO BEGIN WITH,  
7 SIR.

8 YOU MIGHT REFER TO IT AS A BIT OF A SWAMP, OR A LITTLE  
9 MARSHY, BOGGY KIND OF AREA, RIGHT AT THE BASE OF THAT SLIGHT  
10 RISE.

11 Q. THANK YOU, SIR.

12 NOW, I WOULD TO REFER YOU TO PLAINTIFFS' EXHIBIT 1000-121  
13 AND I WOULD LIKE TO ASK YOU ABOUT THESE TRACKS IN THIS  
14 PHOTO LEADING UP TO THE TROOP COMPARTMENT.

15 ARE THEY THE SAME AS THOSE TO WHICH YOU REFERRED IN  
16 THE PREVIOUS PHOTO?

17 A. THAT IS CORRECT.

18 Q. DO YOU HAVE AN OPINION, WITH A REASONABLE DEGREE  
19 OF SCIENTIFIC CERTAINTY, SIR, AS TO HOW THOSE TRACKS WERE  
20 FORMED?

21 A. YES, I DO.

22 MR. DUBUC: NOTE MY OBJECTION, YOUR HONOR.

23 IF HE IS REFERRING TO SOMETHING WITH RESPECT  
24 TO THE TROOP COMPARTMENT GOING THROUGH THE GROUND, THAT  
25 IS ONE THING.

1 IF HE IS GOING TO DEAL IN THE MECHANICS OF THE  
2 AIRCRAFT, I BELIEVE HE HAS ALREADY TESTIFIED THAT THAT  
3 IS NOT HIS FIELD.

4 I DON'T KNOW THE SCOPE OF THE ANTICIPATED ANSWER,  
5 BUT IF IT IS ALONG THE LINES WE ARE HEARING, I HAVE NO  
6 OBJECTION.

7 IF IT IS TO INTERPRET WHAT THE AIRPLANE DID,  
8 I DON'T BELIEVE DR. MORAIN PURPORTS TO HAVE THAT KNOWLEDGE.

9 THE COURT: HOW DO YOU RESPOND TO THAT OBJECTION?

10 MR. MC MANUS: DR. MORAIN IS GOING TO TESTIFY,  
11 SIR, AS TO HIS BELIEF --

12 THE COURT: I DON'T CARE WHAT HE IS GOING TO  
13 TESTIFY. DOES IT MEET THIS OBJECTION, OR DO I HAVE TO  
14 DEAL WITH IT UP HERE?

15 MR. MC MANUS: I DON'T THINK YOU HAVE TO DEAL  
16 WITH IT UP THERE. HE IS NOT AN AERONAUTICAL ENGINEER,  
17 YOUR HONOR.

18 HE IS JUST TESTIFYING ABOUT THE SOIL.

19 THE COURT: ALL RIGHT. GO AHEAD.

20 BY MR. MC MANUS:

21 Q. GO AHEAD, SIR.

22 A. THE OBJECT THAT -- NOW, I HAVE FORGOTTEN THE  
23 QUESTION.

24 Q. DO YOU HAVE AN OPINION, SIR, WITH A REASONABLE  
25 DEGREE OF SCIENTIFIC CERTAINTY, AS TO HOW THESE TRACKS WERE

1 FORMED?

2 A. WELL, YES, I DO.

3 Q. AND WHAT IS THAT OPINION?

4 A. MY OPINION IS THAT SOMETHING HAS SCRAPED ALONG THE  
5 GROUND, OR BEEN DRAGGED ACROSS THE GROUND, IN SUCH A FASHION  
6 AS TO INTERRUPT THE NATURAL SURFACE, AND ALSO TO INTERRUPT  
7 THAT SURFACE IN SUCH A FASHION AS TO CAUSE WATER TO SEEP  
8 INTO THE MARKS MADE BY THAT ACTIVITY.

9 Q. AND WERE YOU ABLE TO MEASURE THOSE TRACKS, SIR,  
10 FROM THIS AND FROM OTHER PHOTOGRAPHS?

11 A. YES; NOT SO MUCH FROM THIS ONE, BUT CERTAINLY  
12 FROM OTHER PHOTOGRAPHS OF THE AREA.

13 Q. AND DO YOU HAVE AN OPINION, WITH A REASONABLE  
14 DEGREE OF SCIENTIFIC CERTAINTY, AS TO THE REASONABLENESS  
15 AND ACCURACY OF YOUR MEASUREMENTS OF THOSE TRACKS?

16 A. NO QUESTION AT ALL. YES.

17 Q. AND COULD YOU GIVE ME, THEN, SIR, THE MEASUREMENT  
18 OF THOSE TRACKS?

19 A. IF I MIGHT, I WOULD LIKE TO BREAK THE NUMBER  
20 INTO SEVERAL PARTS, IF I COULD.

21 Q. YES, SIR.

22 A. WOULD IT BE POSSIBLE FOR ME TO COME DOWN AND  
23 REFER TO THAT PHOTOGRAPH?

24 THE COURT: CERTAINLY.

25 WHY DOESN'T JUROR NO. 6 GO BACK UP IN THE SECOND

1 ROW AGAIN, IF YOU CAN SEE BETTER?

2 THE WITNESS: THIS SHOULD TAKE JUST A SECOND.

3 THE COURT: SURELY.

4 THE WITNESS: THERE ARE -- IT IS EASY TO TRACE  
5 ON THIS PHOTOGRAPH, AND OTHER PHOTOGRAPHS GIVING DIFFERENT  
6 PERSPECTIVES AND ANGLES -- IT IS EASY TO TRACE THESE MARKINGS  
7 BACK TO A POINT THAT IS ROUGHLY HERE.

8 I CAN'T SEE IT MYSELF WHEN I GET THIS CLOSE TO  
9 IT.

10 BUT, GENERALLY SPEAKING, IN THIS AREA THERE IS --  
11 THIS IS THE AREA OF THAT LITTLE MARSHY, BOGGY ENVIRONMENT  
12 THAT I WAS REFERRING TO.

13 THE TRACKS DO NOT LEAD ANY FURTHER BACK THAN TO  
14 HERE, AS YOU CAN SEE, BECAUSE THERE IS NO WATER.

15 FURTHERMORE, WHEN WE GET TO SOME OTHER PHOTOGRAPHS,  
16 IT IS READILY APPARENT TO ME THAT THE BEGINNING PARTS OF  
17 THESE TRACKS ARE NOT AS DEEP AS THE ONES CLOSER TO THIS  
18 OBJECT APPEAR TO BE.

19 THE OVERALL LENGTH FROM THE BACK END OF THIS  
20 TROOP COMPARTMENT OUT TO ABOUT HERE IS, ROUGHLY, 260 FEET,  
21 AS I HAVE SHOWN ON THE WRECKAGE DIAGRAM.

22 BUT THE LENGTH OF THE REALLY DEEP PART, THE REALLY  
23 EVIDENT PART OF THESE TRACKS, WHICH, AS I SAY, FROM OTHER  
24 PERSPECTIVES YOU CAN MEASURE, THE REALLY DEEP PART IS ABOUT  
25 165 FEET LONG.

1 Q. AND, SIR, DO YOU HAVE AN OPINION, WITH A REASONABLE  
2 DEGREE OF SCIENTIFIC CERTAINTY, AS TO WHERE THE TRACKS BEGIN  
3 AND END?

4 A. YES, I DO.

5 Q. AND WHAT IS THAT OPINION, SIR?

6 A. MY OPINION IS THAT THEY BEGIN, GENERALLY, RIGHT  
7 IN HERE. THERE IS SOME LEEWAY IN THE BEGINNING POINT OF  
8 THOSE, BECAUSE, AS I SAY, THEY ARE SHALLOWER.

9 THE FURTHER EASTWARD YOU GO, THE SHALLOWER THE TRACKS  
10 SEEM TO BE.

11 SO JUST EXACTLY WHERE THEY BEGIN IS MAYBE 10 OR 15  
12 FEET ONE WAY OR THE OTHER. BUT I MEASURED THEM TO BE  
13 ABOUT 260 FEET; AT THE BEGINNING POINT, 260 FEET EASTWARD  
14 OF THIS COMPARTMENT.

15 Q. AND DO THE TRACKS GO RIGHT UP TO THE TROOP COMPARTMENT  
16 SIR?

17 A. OH, YES, SIR.

18 Q. AND DO YOU HAVE AN OPINION, WITH A REASONABLE  
19 DEGREE OF SCIENTIFIC CERTAINTY, AS TO WHAT PRODUCED THOSE  
20 TRACKS; WHAT MADE THOSE TRACKS?

21 A. YES.

22 Q. AND WHAT IS THAT, SIR?

23 A. WELL, THE -- I CAN SEE NO OTHER EXPLANATION.  
24 THESE TRACKS WERE MADE BY THAT OBJECT.

25 Q. THE TROOP COMPARTMENT?

1 A. YES, SIR.

2 Q. ALL RIGHT, SIR.

3 AND DO YOU HAVE AN OPINION, WITH A REASONABLE DEGREE  
4 OF SCIENTIFIC CERTAINTY, AS TO WHETHER OR NOT THOSE TRACKS  
5 THAT LEAD UP TO THE TROOP COMPARTMENT ARE CONTINUOUS FROM  
6 THE LOWER HALF OF THE PICTURE BACK UP TO THE -- FROM THIS  
7 AREA --

8 A. HERE.

9 Q. (CONTINUING) -- DOWN HERE, BACK UP TO TROOP COMPART-  
10 MENT?

11 A. I DO HAVE AN OPINION ON THAT, YES.

12 Q. AND WHAT IS YOUR OPINION, SIR?

13 A. MY OPINION IS THAT THE TRACKS TERMINATE MORE  
14 OR LESS RIGHT IN HERE, AND THERE IS NO SIGNIFICANT EVIDENCE  
15 OF ANY TRACKS LEADING EASTWARD OF THAT LINE.

16 Q. THANK YOU, SIR.

17 DOCTOR, YOU MENTIONED AN ELEVATION AT THE FORE END  
18 OF THE TROOP COMPARTMENT?

19 A. YES.

20 Q. COULD YOU EXPLAIN THAT, SIR?

21 A. WE MAY NEED TO REFER TO SOME OTHER PHOTOGRAPHS,  
22 BUT --

23 Q. YES, SIR. ARE THERE ANY PARTICULAR ONES?

24 A. WELL, LET ME ANSWER YOUR QUESTION WITH REGARD  
25 TO THIS ONE FIRST.

1 Q. YES, SIR.

2 A. IT IS -- THERE IS A VISUAL INDICATION ALONG THIS  
3 LINE THAT THERE IS AN INCREASE IN ELEVATION SUCH THAT IF  
4 ONE WERE STANDING, LET'S SAY, HERE, THE LAND WOULD BE SLOPING  
5 AWAY TO THE WEST; AND THERE WOULD BE A MORE OR LESS ABRUPT  
6 DROP IN FRONT OF YOU, OFF TO THE EAST.

7 THERE IS A LOW SPOT IN HERE, WITH A SMALL RISE WESTWARD  
8 OF IT, AND THEN THE LAND JUST GENERALLY SLOPES OFF TO THE  
9 WEST AGAIN.

10 NOW, THE OTHER PHOTOGRAPHS THAT I REFERRED TO GIVE  
11 YOU SOME INDICATION OF THE AMOUNT OF SLOPE.

12 YOU CAN SEE IT, BECAUSE THE HELICOPTERS THAT ARE RESTING  
13 ON THE SURFACE HAVE AN ANGLE TO THEM, AS IF THEY ARE RESTING  
14 ON A SLOPE.

15 Q. DO YOU HAVE AN OPINION, SIR, WITH A REASONABLE  
16 DEGREE OF SCIENTIFIC CERTAINTY, AS TO THE TOPOGRAPHY OF  
17 THE LAND THAT YOU HAVE INDICATED HERE AROUND THE FRONT  
18 END OF THE TROOP COMPARTMENT?

19 A. DO I HAVE AN OPINION?

20 Q. DO YOU HAVE AN OPINION, WITH A REASONABLE DEGREE  
21 OF CERTAINTY, AS TO THE NATURE OF THE TOPOGRAPHY IN THIS  
22 AREA THAT YOU INDICATED AT THE FRONT END OF THE TROOP COMPART-  
23 MENT?

24 A. AS TO THE NATURE OF THE TOPOGRAPHY, IF I UNDERSTAND  
25 YOUR QUESTION, YOU ARE REFERRING TO THE MATERIAL OUT OF

1 WHICH THE STUFF IS MADE, OR WHAT?

2 A. NO, SIR.

3 YOU HAVE THAT IT IS YOUR OPINION THAT THERE IS A RISE  
4 THERE.

5 A. YES.

6 Q. I AM ASKING YOU:

7 IS THAT YOUR OPINION, SIR, WITH A REASONABLE DEGREE  
8 OF SCIENTIFIC CERTAINTY?

9 A. OH, YES. WITHOUT QUESTION.

10 Q. THANK YOU, SIR.

11 THE COURT: WILL YOU BE NEEDING THE EASEL ANY  
12 MORE? I MEAN WILL WE HAVE TO REARRANGE THE LAWYERS AGAIN,  
13 MR. MC MANUS?

14 MR. MC MANUS: I BELIEVE THERE MIGHT BE A NEED,  
15 SIR. I DON'T KNOW IF THE DOCTOR NEEDS TO REFER TO SOME  
16 PHOTOS WHEN TALKING ABOUT THE CONDITION OF THE VEGETATION,  
17 YOUR HONOR.

18 THE WITNESS: THERE ARE SOME PHOTOGRAPHS THAT  
19 I THINK ILLUSTRATE --

20 MR. MC MANUS: THEN, WE WILL --

21 THE WITNESS: (CONTINUING) -- CERTAIN POINTS.

22 MR. MC MANUS: (CONTINUING) -- AT SOME POINT.

23 MR. DUBUC: DID YOUR HONOR WANT US TO GO BACK  
24 NOW?

25 THE COURT: WHY DON'T YOU JUST STAY THERE, UNLESS

1 YOU ARE GETTING TIRED.

2 MR. DUBUC: NO. SO FAR I AM ALL RIGHT, YOUR  
3 HONOR.

4 THE COURT: ALL RIGHT.

5 BY MR. MC MANUS:

6 Q. NOW, DOCTOR, VERY BRIEFLY, ON THE OTHER TRACKS,  
7 AND REFERRING, AGAIN, TO 5258, DO YOU HAVE AN OPINION,  
8 SIR, WITH A REASONABLE DEGREE OF SCIENTIFIC CERTAINTY,  
9 AS TO HOW THESE TRACKS HERE IN THE MIDDLE OF THIS PHOTOGRAPH  
10 WERE FORMED?

11 A. YES.

12 Q. AND WHAT IS THAT OPINION, SIR?

13 A. MY OPINION IS THAT THOSE TRACKS ARE ALSO THE  
14 REMAINS OF THE MOVEMENT OF SOMETHING ACROSS THAT SURFACE.

15 Q. THANK YOU, SIR.

16 NOW, DOCTOR, YOUR THIRD TASK WAS TO DETERMINE THE  
17 CONDITION OF THE VEGETATION AROUND THE CRASH SITE. DO  
18 YOU HAVE AN OPINION, WITH A REASONABLE DEGREE OF SCIENTIFIC  
19 CERTAINTY, AS TO THE CONDITION OF THE VEGETATION AT THE  
20 CRASH SITE AND AROUND THE VARIOUS WRECKAGE COMPONENTS OF  
21 THE C-5A?

22 A. YES, SIR, I DO.

23 Q. AND WHAT IS THAT OPINION, SIR?

24 A. MY OPINION IS THAT THERE ARE SEVERAL TYPES OF  
25 DISCOLORATION, PARTICULARLY, AS I INDICATED EARLIER, AROUND

1 THAT TROOP COMPARTMENT, WHICH IS WHERE I CONCENTRATED MY  
2 ATTENTION.

3 Q. AND TO WHAT TYPES OF DISCOLORATION ARE YOU REFERRING,  
4 SIR?

5 A. WELL, THE VEGETATION, IN ITS NORMAL, HEALTHY,  
6 VIGOROUS STATE, WOULD BE GREEN. I THINK THAT WOULD BE  
7 ANTICIPATED, SINCE IT IS A TROPICAL ENVIRONMENT AND GENERALLY  
8 RATHER WET AROUND THERE.

9 BUT IN THE PHOTOGRAPHS THAT I HAVE REVIEWED, THE VEGETATION  
10 AROUND THE TROOP COMPARTMENT IS BROWN, OR BROWNISH, WITH  
11 PATCHES OF BLACK.

12 AND MY CONCLUSION FROM THAT IS THAT THERE HAS BEEN  
13 SOMETHING HAPPENING <sup>TO</sup> /THAT VEGETATION THAT ALTERED ITS VIGOROUS,  
14 NORMAL, HEALTHY STATE OF GROWTH.

15 Q. NOW, DOCTOR, I WOULD LIKE TO REFER YOU, SIR,  
16 TO PLAINTIFFS' EXHIBIT 5207. THERE ARE SOME GREEN STALKS  
17 AMONG THE BROWN?

18 A. YES, SIR.

19 Q. DO YOU HAVE AN OPINION, WITH A REASONABLE DEGREE  
20 OF SCIENTIFIC CERTAINTY, AS TO WHAT THAT IS, SIR?

21 A. YES.

22 Q. AND WHAT IS THAT OPINION?

23 A. WELL, MY OPINION IS, BASICALLY, THAT SOMETHING  
24 HAS DAMAGED THE HEALTH OF THE VEGETATION IN THAT AREA.

25 Q. ALL RIGHT. IS THERE AN EXPLANATION AS TO WHY

1 SOME OF THE FOLIAGE IS BROWN AND SOME REMAINS GREEN?

2 A. MY OPINION IS THAT THERE HAS BEEN A FIRE IN THAT  
3 AREA, SOMETHING OF THAT NATURE, THAT WOULD NOT ONLY REMOVE  
4 AND REDUCE TO CARBON SOME OF THE LEAVES, BUT ALSO TO REACH  
5 A POINT OF SUCH TEMPERATURE AS TO REDUCE OTHER PARTS OF  
6 THE VEGETATION TO A BROWNISH, NON-VIGOROUS STATE OF HEALTH.

7 Q. DO YOU HAVE SOME PHOTOGRAPHS WITH YOU, SIR, OF  
8 THE TROOP COMPARTMENT?

9 A. I DO, YES.

10 Q. ALL RIGHT.

11 ARE THERE SOME THAT YOU HAVE WITH YOU THAT ARE USEFUL  
12 IN EXPLAINING YOUR OPINION CONCERNING THE VEGETATION?

13 A. THERE IS ONE IN PARTICULAR THAT I HAVE USED FOR  
14 MY REPORT THAT I DO NOT HAVE WITH ME.

15 THE OTHERS THAT I DO HAVE WITH ME, I THINK, TAKEN  
16 AS A WHOLE, WILL SUBSTANTIATE MY COMMENTS WITH REGARD TO  
17 THE GENERAL CONDITION OF THE VEGETATION.

18 THE COURT: I WILL STRIKE THE REFERENCE TO THE  
19 PHOTOGRAPHS THAT THE DOCTOR DOESN'T HAVE. GO AHEAD.

20 BY MR. MC MANUS:

21 Q. CAN YOU LOOK AT YOUR REPORT, SIR --

22 A. YES.

23 Q. (CONTINUING) -- AND FIND WHICH PHOTOGRAPH THAT  
24 IS, SO WE CAN GET THAT?

25 A. I HAVE IN MY REPORT -- I DO NOT HAVE A PLAINTIFFS'

1 EXHIBIT NUMBER OR A DEFENDANTS' EXHIBIT NUMBER.

2 I HAVE -- MY RECOLLECTION IS THAT IT IS PLAINTIFFS'  
3 EXHIBIT 3-E, IF I RECALL. THAT IS IT.

4 BUT THERE ARE SO MANY PHOTOGRAPHS, SERIES OF PHOTOGRAPHS,  
5 THAT I DON'T KNOW TO WHICH SERIES THAT REFERS.

6 MR. MC MANUS: YOUR HONOR, WE DO HAVE THAT IN  
7 THE WITNESS ROOM.

8 THE COURT: WELL, THEN, GO AHEAD AND DO WHAT  
9 YOU CAN UNTIL IT GETS HERE.

10 MR. MC MANUS: YES, SIR.

11 BY MR. MC MANUS:

12 Q. NOW, DOCTOR, DO YOU HAVE AN OPINION, WITH A REASONABLE  
13 DEGREE OF SCIENTIFIC CERTAINTY, AS TO THE CAUSE OF THE  
14 DISCOLORATION OF THE VEGETATION AT THE CRASH SITE?

15 MR. DUBUC: OBJECTION, YOUR HONOR. MAY WE APPROACH  
16 THE BENCH?

17 THE COURT: YES.

18 WHY DO WE NOT JUST EXCUSE THE JURY. THEN WE  
19 WILL NOT HAVE TO BE SO CRAMPED.

20 (THE JURY WAS TAKEN OUT OF THE COURTROOM, AND  
21 THE FOLLOWING PROCEEDINGS WERE HAD WITHOUT THE PRESENCE  
22 AND HEARING OF THE JURY:)

23 THE COURT: MR. DUBUC.

24 MR. DUBUC: I LET THE FIRST ONE OF THESE GO BY,  
25 BECAUSE IT KIND OF SLIPPED OUT, AND I DIDN'T KNOW WE WERE

1 GOING TO COME BACK TO THIS BURN-PATTERN BUSINESS.

2 IN HIS DEPOSITION, DR. MORAIN WAS ASKED ABOUT  
3 THIS, AND IT IS MY UNDERSTANDING -- AND I HAVE SOME QUOTES  
4 HERE, WHICH I CAN LET THE COURT READ, OR I CAN READ INTO  
5 THE RECORD.

6 HE WAS ASKED ABOUT THE DISCOLORATION, AND HE STATED --  
7 HE WAS ASKED ABOUT THE CAUSE. HE WAS ASKED:

8 "HAVE YOU EVER SEEN THAT SORT OF DISCOLORATION  
9 BEFORE? I AM TALKING ABOUT THE COLOR OF DISCOLORATION,  
10 THE TYPE, AND NOT NECESSARILY WHAT YOU MIGHT NOW CONCLUDE  
11 TO BE THE CAUSE.

12 "NO, I REALLY HAVEN'T.

13 "WHAT SORT OF EXAMINATION OR STUDY WOULD YOU  
14 HAVE TO CONDUCT TO DETERMINE OR TO REACH AN OPINION REGARDING  
15 THE CAUSE OF THE DISCOLORATION?

16 "YOU USED THE WORD 'CAUSE.' NOT BEING A PLANT  
17 PHYSIOLOGIST, I AM NOT REALLY COMPETENT TO ANSWER THAT  
18 QUESTION AS TO CAUSE."

19 THAT WAS IN THE DEPOSITION OF OCTOBER 26, 1981.

20 THE COURT: WHAT MONTH?

21 MR. DUBUC: OCTOBER 26TH.

22 THE COURT: OCTOBER?

23 MR. DUBUC: OCTOBER 26TH OF 1981.

24 THE COURT: ALL RIGHT.

25 MR. DUBUC: THIS GOES TO THE OBJECTION I RAISED

1 INITIALLY AS TO THE SCOPE OF HIS TESTIMONY, YOUR HONOR.

2 AND IN HIS DEPOSITION OF THE 24TH OF NOVEMBER,  
3 WHEN ASKED ABOUT THE CHEMICAL REACTION OF THE PLANTS AND  
4 THE CAUSE -- WHAT CAUSED THE DEATH OF THE PLANTS --

5 MR. MC MANUS: EXCUSE ME. ON WHAT PAGE ARE  
6 YOU, MR. DUBUC?

7 MR. DUBUC: I AM ON 113.

8 MR. MC MANUS: 103?

9 MR. DUBUC: 113.

10 MR. MC MANUS: THANK YOU.

11 MR. DUBUC: THE PRELIMINARY WAS:

12 "I AM TALKING ABOUT EXPERIENCE IN THE CHEMICAL  
13 MAKE-UP AND CHEMICAL REACTIONS OF PLANTS TO GIVEN  
14 PHENOMENON. (SIC) WHAT EXPERIENCE DO YOU HAVE IN THAT  
15 AREA?

16 "ALL I AM PREPARED TO SAY IS THAT ALL OF MY BACK-  
17 GROUND EXPERIENCE IS THAT SOME OF THAT VEGETATION IS  
18 DEAD. I AM NOT PREPARED TO SAY WHAT CAUSED THAT DEATH,  
19 BUT THERE ARE LOTS OF PHOTOGRAPHS THERE THAT SUBSTANTIATE THAT  
20 POINT.

21 "IN POINT OF FACT, YOU CANNOT STATE A CAUSE FOR  
22 THE DISCOLORATION; CAN YOU?

23 "ANSWER: NO, I CANNOT."

24 NOW, I CAN USE THAT ON CROSS, BUT THE PROBLEM  
25 IS THIS:

1 IF WE ARE GOING TO REPEAT THIS SEVERAL TIMES,  
2 IT GETS HARDER AND HARDER.

3 THE COURT: LET'S FIND OUT WHAT THEIR EXPLANATION  
4 IS.

5 MR. DUBUC: AND I ORIGINALLY OBJECTED TO THAT,  
6 AS YOU MAY RECALL, YOUR HONOR, BEFORE HE TESTIFIED; AND  
7 I DIDN'T THINK HE WAS GOING TO GIVE THAT OPINION, BASED  
8 ON TWO DEPOSITIONS.

9 BUT, APPARENTLY, IF HE HAS MADE AN ADDITIONAL  
10 STUDY, WHICH I HAVE NOT HEARD MENTIONED, NOR ANY FOUNDATION  
11 FOR THAT LAID, THAT MIGHT BE ANOTHER THING.

12 BUT IF HE HAS NOT, THEN, EVEN THOUGH I CAN CROSS-  
13 EXAMINE, I THINK, ONCE IT IS IN THIS RECORD OVER THE INITIAL  
14 OBJECTION, IT IS JUST MORE DIFFICULT.

15 THE COURT: YES.

16 MR. DUBUC: AND I OBJECT TO THAT.

17 THE COURT: ALL RIGHT. LET ME HEAR MR. MC MANUS'  
18 RESPONSE.

19 MR. MC MANUS: YOUR HONOR, I THINK I MIGHT REPHRASE  
20 THE QUESTION TO DR. MORAIN, AND ASK HIM IF HE HAS AN OPINION  
21 AS TO A PATTERN OF DISCOLORATION OF VEGETATION.

22 NOW, WHEN MR. --

23 THE COURT: ARE WE GOING TO HAVE TO PUT THE FIRE  
24 OUT?

25 MR. MC MANUS: NO, SIR. IT IS HIS OPINION THAT

1 THERE WAS A FIRE THERE.

2 I THINK THE QUESTION AT THE DEPOSITION WAS THE  
3 QUESTION:

4 WHAT, CHEMICALLY, IN THE PLANT, WHAT ABOUT THE  
5 PLANT, CHANGES?

6 IN OTHER WORDS, IS THIS MAN A BOTANIST, AND DOES  
7 HE KNOW HOW, PARTICULARLY, A PLANT ERODES?

8 HE IS NOT. BUT HE IS SOMEONE WHO HAS STUDIED  
9 VEGETATION VERY CAREFULLY, AND IS AN EXPERT IN IT, AND  
10 CAN SEE THAT THERE IS A PATTERN.

11 THE COURT: I NOTICE THAT THE DOCTOR IS SITTING  
12 HERE IN THE COURTROOM.

13 WHY DOESN'T HE COME BACK UP ON THE STAND, AND  
14 LET'S TALK TO HIM.

15 MR. MC MANUS: YES, YOUR HONOR.

16 THE COURT: LET ME ASK HIM A COUPLE OF QUESTIONS.

17 MR. MC MANUS: YES, SIR.

18 THE COURT: DOCTOR, HAVE YOU HAD EXPERIENCE IN  
19 LOOKING AT A PICTURE AND SEEING VEGETATION AND FORMING  
20 AN OPINION AS TO WHAT CAUSED IT TO BE ONE COLOR?

21 THE WITNESS: I HAVE HAD SOME EXPERIENCE WITH  
22 BURN PATTERNS.

23 THE COURT: WHAT EXPERIENCE?

24 THE WITNESS: IN KANSAS, DURING MY RESEARCH PHASE  
25 THERE, WHICH WAS FROM 1964 UNTIL ABOUT 1974, WE LOOKED

1 QUITE A BIT AT WHEATFIELDS THAT HAD BEEN BURNED PURPOSELY.

2 I HAVE HAD EXPERIENCE WITH BURN SCARS IN ALASKA,  
3 BUT NOT WITH PHOTOGRAPHS. IT WAS WITH OTHER FORMS OF IMAGES,  
4 SIR.

5 I HAVE ALSO HAD SOME EXPERIENCE IN THAILAND WITH  
6 RICE PADDIES THAT HAD BEEN BURNED PURPOSELY.

7 THE COURT: MR. DUBUC, WOULD YOU CARE TO INQUIRE  
8 IN THE FORM OF A VOIR DIRE AT THIS POINT ON THIS STATEMENT?

9 MR. DUBUC: I THINK WE HAVE INQUIRED AT DEPOSITIONS  
10 TWICE, AND THOSE ARE THE ANSWERS WE HAVE GOTTEN.

11 THE COURT: I KNOW, BUT NOW YOU HAVE HIM HERE.  
12 YOU KEEP FORGETTING THAT A DEPOSITION IS NOT A TRIAL. THIS  
13 IS THE TRIAL.

14 MR. DUBUC: NO. NO. I UNDERSTAND THAT, YOUR  
15 HONOR.

16 THE COURT: NOW, DO YOU WANT TO MAKE ANY INQUIRY,  
17 BEFORE I RULE ON YOUR OBJECTION TO THE DOCTOR'S QUALIFICATIONS  
18 TO GIVE THE OPINION THAT HE IS NOW GIVING?

19 VOIR DIRE EXAMINATION

20 BY MR. DUBUC:

21 Q. DOCTOR, I BELIEVE YOU TOLD US IN YOUR DEPOSITION --  
22 AND THIS IS THE REASON I AM MAKING THE OBJECTION -- THAT  
23 TO DETERMINE WHAT HAPPENED TO THE CHLOROPHYLL IN THOSE  
24 PLANS TO CAUSE THAT DISCOLORATION WHICH YOU HAVE JUST DESCRIBED,  
25 YOU HAVE TO MAKE SOME KIND OF AN ANALYSIS. AND IF YOU

1 ARE MAKING THAT ANALYSIS, IT COULD BE FROM SEVERAL KINDS  
2 OF CAUSES.

3 NOW, AS I UNDERSTOOD IT, YOU DIDN'T MAKE THAT KIND  
4 OF ANALYSIS IN THIS CASE. YOU DID IT FROM THE DISCOLORATION  
5 IN THE PHOTOGRAPHS ONLY?

6 A. THE NATURE OF THE EVIDENCE IS PHYSICAL, AND NOT  
7 CHEMICAL. AND, AS I CAN SHOW ON SOME OF THESE PHOTOGRAPHS,  
8 IT IS BY A COMPARISON.

9 THERE ARE CERTAIN AREAS WITHIN THIS PATTERN THAT APPEAR  
10 NOT TO HAVE BEEN AFFECTED. THAT IS TO SAY, THE VEGETATION  
11 APPEARS AS ONE WOULD EXPECT IT TO APPEAR.

12 THERE ARE OTHER AREAS AND COLORS WHERE THERE IS OBVIOUSLY  
13 A CHANGE FROM THE NORMAL PATTERN.

14 THE NATURE OF THAT CHANGE IS THE ABSENCE OF LEAVES,  
15 BARE STEMS, THAT SORT OF THING. SO IT IS PHYSICAL EVIDENCE,  
16 SIR.

17 NOW, WHEN WE GET INTO THE QUESTION OF WHAT CAUSED  
18 THAT VEGETATION TO TURN FROM GREEN TO BROWN TO BLACK, IF  
19 THAT IS A CHEMICALLY ORIENTED QUESTION, THEN I AM NOT A  
20 PLANT PHYSIOLOGIST; AND I DON'T HAVE ANY COMMENT ON THAT.

21 BUT OUR VOCABULARY IS SUCH THAT I, WHEN ASKED FOR  
22 AN OPINION, HAVE ONLY CERTAIN WORDS IN MY VOCABULARY THAT  
23 I CAN RELATE BACK TO, AND "FIRE" IS ONE OF THEM.

24 WHEN VEGETATION IS BLACK AND I SEE NO LEAVES, IT IS  
25 MY COMMON EXPERIENCE, AND I AM BOUND BY A CERTAIN VOCABULARY

1 BEYOND WHICH I CANNOT DREAM UP A NEW WORD FOR IT. THAT  
2 IS THE WORD WE USE.

3 Q. BUT THIS IS DETERMINED SOLELY FROM LOOKING AT  
4 THE PICTURES AND, IN EFFECT, SEEING NO GREEN. THEREFORE,  
5 THERE IS NO CHLOROPHYLL IN THE PLANTS.

6 THEREFORE, THERE IS A COLOR; AND, THEREFORE, YOUR  
7 ASSUMPTION IS FIRE.

8 IS THAT IT?

9 A. YES, SIR. THAT IS A REASONABLE CONCLUSION TO  
10 DRAW WHEN ONE SEES AREAS OF BLACK WITHOUT LEAVES.

11 Q. AND YOU HAVE NO EXPERIENCE WITH AVIATION-FUEL  
12 FIRES; IS THAT CORRECT?

13 A. THAT IS CORRECT.

14 Q. AND YOU ARE NOT COMPETENT TO MAKE THE CHEMICAL  
15 ANALYSIS OF WHY THE CHLOROPHYLL CAME OUT SCIENTIFICALLY.  
16 IT IS BASED SOLELY ON LOOKING AT PICTURES?

17 A. THAT IS CORRECT.

18 Q. AND YOU ARE NOT COMPETENT TO TESTIFY AS TO THE  
19 MECHANISM BY WHICH THAT CHOLORPHYLL WAS REMOVED; WHETHER  
20 IT WAS CHEMICAL, FROM ANOTHER SOURCE, FROM HEAT, WHATEVER;  
21 IN OTHER WORDS, THE REMOVAL OF THE CHLOROPHYLL?

22 A. WELL, I HAVE ALREADY SAID THAT IT IS THE PHYSICAL  
23 EVIDENCE AS SEEN ON THE PHOTOGRAPHS THAT LEADS ME TO A  
24 LOGICAL CONCLUSION.

25 Q. WELL, THE PROCESS BY WHICH A GREEN PLANT BECOMES

1 DISCOLORED BY A FIRE, WOULD YOU AGREE, IS BECAUSE CHLOROPHYLL  
2 IS REMOVED BY HEAT IN SOME WAY?

3 A. I WOULD SAY THAT THE VEGETATION IS HIGHLY OXIDIZED;  
4 AND, THROUGH THE PROCESS OF OXIDATION THROUGH HEAT AND  
5 FLAME, TURNS FROM GREEN TO BROWN TO BLACK.

6 Q. BUT THAT IS NOT YOUR AREA OF EXPERTISE; IS THAT  
7 CORRECT?

8 YOU ARE NOT COMPETENT TO MAKE THAT PARTICULAR ANALYSIS  
9 THAT --

10 THE COURT: HE DIDN'T SAY THAT, MR. DUBUC.

11 BY MR. DUBUC:

12 Q. WELL --

13 A. I HAVE HAD HIGH-SCHOOL CHEMISTRY. THAT IS A  
14 COMMON EXPERIMENT IN HIGH-SCHOOL CHEMISTRY: HOW TO BURN  
15 THINGS.

16 Q. WELL, YOU PREVIOUSLY TOLD US YOU WEREN'T COMPETENT  
17 TO DO THAT; DIDN'T YOU?

18 MR. MC MANUS: YOUR HONOR, I BELIEVE --

19 BY MR. DUBUC:

20 Q. REFERRING TO PAGE 111 IN YOUR DEPOSITION OF NOVEMBER  
21 24TH --

22 THE COURT: LET'S STRIKE THAT. LET'S CORRECT  
23 THAT QUESTION.

24 IF YOU ARE GOING TO CROSS-EXAMINE HIM ON HIS  
25 DEPOSITION, THERE IS AN APPROVED PROCEDURE FOR THAT.

1 BY MR. DUBUC:

2 Q. DOCTOR, ON THE ISSUE --

3 MR. MC MANUS: ALSO, YOUR HONOR --

4 THE COURT: DO YOU HAVE AN OBJECTION?

5 MR. MC MANUS: YES, YOUR HONOR, I HAVE AN OBJECTION.

6 THE COURT: WHAT IS THE OBJECTION?

7 MR. MC MANUS: THE QUESTION OF COMPETENCY IS  
8 ONE FOR THE COURT TO DECIDE.

9 THE COURT: I UNDERSTAND THAT, BUT HE CAN STILL  
10 INQUIRE ABOUT IT.

11 BY MR. DUBUC:

12 Q. DOCTOR, IN YOUR DEPOSITION OF NOVEMBER 24, 1981,  
13 ON PAGE 111, LINE 6, ON THIS SUBJECT THAT WE WERE JUST  
14 DISCUSSING, QUESTION:

15 "ARE YOU ABLE TO EXPLAIN THE MECHANISM BY WHICH CHLOROPHYLL  
16 WITHDRAWS HEAT FROM VEGETATION?

17 "ANSWER: NO.

18 "YOU ARE NOT COMPETENT IN THAT AREA?

19 "ANSWER: NO."

20 DID YOU GIVE THOSE ANSWERS TO THOSE QUESTIONS?

21 A. I WOULD LIKE TO SEE THE CONTEXT IN WHICH THAT  
22 WAS SAID.

23 Q. ALL RIGHT, SIR.

24 THE INITIAL QUESTION ON LINE ONE WAS:

25 "ARE YOU ABLE TO EXPLAIN THE MECHANISM BY WHICH HEAT

1 WITHDRAWS FROM PLANTS," AND SO FORTH.

2 A. THE ANSWER TO THAT LAST QUESTION YOU READ WAS:

3 "IF THE LEAVES ARE NO LONGER PHOTOSYNTHESIZING, THEY  
4 ARE PRESUMED DEAD."

5 Q. AND YOU GAVE THOSE TWO OTHER ANSWERS; IS THAT  
6 CORRECT? DO YOU WANT TO LOOK AT THE DATE OF THE DEPOSITION?

7 A. NO, I RECALL IT. I RECALL THE DATE.

8 Q. IT IS RIGHT HERE.

9 A. I RECALL THE DATE.

10 Q. NOVEMBER 24TH, DR. MORAIN?

11 A. YES, I RECALL THE DATE.

12 Q. DOCTOR, DID YOU GIVE THOSE ANSWERS?

13 A. YES, SIR, I DID.

14 THE COURT: DOES THAT COMPLETE YOUR EXAMINATION,  
15 MR. DUBUC?

16 MR. DUBUC: YES, YOUR HONOR. I STILL NOTE MY  
17 OBJECTION.

18 THE COURT: IS THERE ANYTHING FURTHER YOU WANT  
19 TO SAY IN SUPPORT OF YOUR OBJECTION?

20 MR. DUBUC: NO, YOUR HONOR.

21 THE COURT: THE OBJECTION IS OVERRULED. BRING  
22 BACK THE JURY.

23 (THE JURY WAS BROUGHT INTO THE COURTROOM, AND  
24 THE FOLLOWING PROCEEDINGS WERE HAD WITHIN THE PRESENCE  
25 AND HEARING OF THE JURY:)

BY MR. MC MANUS:

Q. DR. MORAIN, HAVE YOU EXPERIENCE IN VIEWING PHOTOGRAPHS OF VEGETATION IN AN EFFORT TO DETERMINE CAUSE OF THE DISCOLORATION OF VEGETATION?

A. YES, I HAVE.

Q. AND WHAT IS THAT EXPERIENCE, SIR?

A. BETWEEN 1964/1965 AND APPROXIMATELY 1974, I HAD SEVERAL OCCASIONS, WHILE LIVING IN KANSAS, TO LOOK AT FIRES THAT HAD BEEN DELIBERATELY SET, SIR, IN WHEAT-STUBBLE FIELDS.

SO I WAS ABLE TO SEE THE EFFECTS OF FIRE IN WHEAT STUBBLE.

I WAS ALSO ABLE, BETWEEN 1973 AND 1975 OR 1976, TO OBSERVE THE SAME KINDS OF ACTIVITIES BY RICE-GROWERS IN THAILAND, IN THEIR EFFORTS TO BURN OFF RICE STUBBLE.

Q. SIR --

A. THOSE ARE MY MAIN EXPERIENCES IN THAT AREA.

Q. THANK YOU, SIR.

NOW, DO YOU HAVE AN OPINION, WITH A REASONABLE DEGREE OF SCIENTIFIC CERTAINTY, AS TO THE CAUSE OF THE DISCOLORATION OF THE VEGETATION AROUND THE VARIOUS COMPONENTS OF THE C-5A WRECKAGE, AND PARTICULARLY AROUND THE TROOP COMPARTMENT?

A. YES, SIR, I DO.

Q. AND WHAT IS THAT OPINION, SIR?

A. MY OPINION, BASED ON PHYSICAL EVIDENCE IN THE PHOTOGRAPHS, IS THAT THE PATTERNS OF DISCOLORATION ARE

1 RELATED TO FIRE.

2 THAT EVIDENCE RELATES TO THE ABSENCE OF LEAVES, THE  
3 GENERAL PATTERNS OF BROWN TO BLACK AND -- WELL, I DON'T  
4 KNOW HOW ELSE TO SAY IT.

5 I CAME TO THAT CONCLUSION.

6 Q. THANK YOU, SIR.

7 NOW, IF WE COULD GO BACK BRIEFLY, SIR, TO THE ELEVATION  
8 THAT YOU MENTIONED THAT WAS AT THE FRONT OF THE TROOP COMPART-  
9 MENT --

10 A. YES, SIR.

11 Q. (CONTINUING) -- DO YOU HAVE AN OPINION, SIR,  
12 WITH A REASONABLE DEGREE OF SCIENTIFIC CERTAINTY, AS TO  
13 HOW THAT ELEVATION WAS CREATED?

14 A. YES.

15 Q. AND WHAT IS THAT OPINION, SIR?

16 A. MY OPINION IS THAT IN THE ALLUVIAL PLAIN KNOWN  
17 AS THE MEKONG DELTA, THERE ARE -- WHEN ONE SAYS "PLAIN,"  
18 THAT DOESN'T NECESSARILY MEAN FLAT AS A TABLETOP.

19 IN THE PROCESS OF NATURE FORMING THIS SURFACE, THERE  
20 ARE IRREGULARITIES IN THAT SURFACE, SMALL RISES AND --  
21 WELL, I SHOULD SAY AREAS THAT ARE SLIGHTLY HIGHER IN ELEVATION  
22 AND ARE BETTER DRAINED, AND AREAS OF LOWER ELEVATION THAT  
23 ARE LESS-WELL-DRAINED AND WHERE WATER TENDS TO ACCUMULATE.

24 THIS ELEVATIONAL RISE TO WHICH WE ARE REFERRING TO  
25 WOULD BE PROBABLY A NATURAL FEATURE IN THE IRREGULARITIES

1 OF THAT SURFACE.

2 Q. AND, SIR, DO YOU HAVE AN OPINION, WITH A REASONABLE  
3 DEGREE OF SCIENTIFIC CERTAINTY, AS TO THE HARDNESS OF STRENGTH  
4 OF THAT ELEVATION?

5 A. YES.

6 THE MOST PROBABLE EXPLANATION, ONE WHICH WE SEE THROUGHOUT  
7 SOUTHEAST ASIA, IS THAT, BECAUSE IT IS OF A SLIGHTLY HIGHER  
8 ELEVATION, THIS PERCHED WATER TABLE, TO WHICH I REFERRED  
9 EARLIER, RISES AND LOWERS OVER A SOMEWHAT GREATER RANGE  
10 THAN DOES THE WATER TABLE THROUGHOUT THE REST OF THE PLAIN.

11 AND, IN THE PROCESS OF DOING THAT, THOSE PARTICULAR  
12 ELEVATIONAL RISES UNDERGO MORE EXTREME OXIDATION AND REDUCTION  
13 THESE ARE CHEMICAL TERMS -- SUCH THAT THE IRON AND ALUMINUM  
14 IN THE SOIL ARE MOBILIZED DURING A REDUCTION PHASE, WHICH  
15 IS DURING A FLOOD STAGE.

16 AND DURING THE OXIDATION PHASE, THOSE IRON AND ALUMINUM  
17 COMPOUNDS TEND TO AGGREGATE INTO WHAT ARE REFERRED TO IN  
18 SOIL GENETICS AS PISOLITES.

19 THE COURT: SPELL IT.

20 THE WITNESS: P-I-S-O-L-I-T-E-S.

21 THE COURT: THANK YOU.

22 THE WITNESS: OR IRONSTONE CONCRETIONS. OKAY.  
23 THEY MAY TAKE THAT FORM. THEY MAY TAKE A NUMBER OF OTHER  
24 FORMS.

25 THE POINT IS THAT WE ARE DEALING WITH A MATERIAL

1 THAT IS IRON-RICH.

2 AND WHEN IT DRIES OUT, IT CAN BECOME IRREVERSIBLY  
3 DRY. THAT IS TO SAY, ONCE IT IS DRIED OUT COMPLETELY,  
4 YOU CANNOT REWET IT AND MAKE IT SOFT AGAIN.

5 IT TURNS INTO A ROCK WHICH CAN, IF YOU HIT IT  
6 WITH A HAMMER, RING; IT HAS SO MUCH IRON IN IT.

7 IN THIS PARTICULAR CASE, THE MATERIAL HAS NOT  
8 DRIED OUT IRREVERSIBLY, IN MY OPINION, BECAUSE THE WATER  
9 IS STILL RISING AND LOWERING IN A NATURAL ENVIRONMENT.

10 SO IT WOULD BE IRON-RICH, AND RELATIVELY HARD,  
11 BUT NOT ROCKLIKE.

12 BY MR. MC MANUS:

13 Q. THANK YOU, SIR.

14 NOW, SUBSEQUENT TO YOUR HAVING REVIEWED MOVIES AND  
15 THE PHOTOGRAPHS THAT WE HAVE DISCUSSED TODAY IN THE PREPARATION  
16 OF YOUR REPORT, HAVE YOU SEEN ANY COMPUTER-ENHANCED OR  
17 AERIAL PHOTOGRAPHS OF THE CRASH SITE?

18 A. YES, I HAVE.

19 WHEN YOU SAY "COMPUTER-ENHANCED," I HAVE SEEN SOME  
20 SLIDES THAT, I HAVE BEEN TOLD, ARE LASER ENHANCEMENTS.  
21 I PRESUME A COMPUTER WAS INVOLVED SOMEWHERE IN THEIR PRODUCTION,  
22 SIR.

23 Q. AND DO EITHER THOSE AERIAL PHOTOGRAPHS OR THE  
24 LASER-ENHANCED PHOTOGRAPHS HAVE ANY EFFECT ON THE OPINIONS  
25 THAT YOU HAVE GIVEN TO US TODAY?

1 A. YES.

2 Q. AND WHAT EFFECT, SIR?

3 A. THEY TEND TO CONFIRM WHAT I HAVE ALREADY OBSERVED  
4 ON THE NORMAL PHOTOGRAPHS.

5 Q. NOW, SIR, I WOULD LIKE TO SHOW YOU WHAT HAS BEEN  
6 MARKED AS PLAINTIFFS' EXHIBIT 235 AND ASK IF YOU CAN IDENTIFY  
7 THIS, SIR?

8 A. YES, I CAN.

9 Q. AND WHAT IS THAT, SIR?

10 A. IT IS A COPY OF MY REPORT ON THESE THREE TASKS,  
11 AND THE ONLY VARIANCE IS THAT THE REVISED WRECKAGE DIAGRAM  
12 HAS NOT YET BEEN DRAFTED UP IN FINAL FORM.

13 Q. AND THE REVISED WRECKAGE DIAGRAM IS THIS DIAGRAM?

14 A. YES, IT IS.

15 Q. IS THAT CORRECT, SIR?

16 A. YES.

17 Q. 248, PLAINTIFFS' EXHIBIT 248?

18 A. YES.

19 MR. MC MANUS: YOUR HONOR, AT THIS TIME I WOULD  
20 MOVE DR. MORAIN'S REPORT INTO EVIDENCE.

21 MR. DUBUC: OBJECTION. MAY WE APPROACH THE  
22 BENCH, YOUR HONOR?

23 THE COURT: LET ME ASK YOU THIS:

24 CAN YOU GO ON TO SOMETHING ELSE AND THEN COME  
25 BACK TO THAT AT THE RECESS?

1 MR. MC MANUS: THOSE ARE ALL THE QUESTIONS I  
2 HAVE, YOUR HONOR.

3 THE COURT: WELL, THEN, LET'S COME TO THE BENCH,  
4 GENTLEMEN.

5 ( AT THE BENCH )

6 THE COURT: YES, MR. DUBUC.

7 MR. DUBUC: YOUR HONOR, MY UNDERSTANDING OF THE  
8 PRETRIAL RULINGS IS THAT THE EXPERTS' REPORTS WERE GOING  
9 TO BE USED FOR EXAMINATION, OR CROSS-EXAMINATION, BUT THEY  
10 WERE NOT GOING TO BE ADMITTED INTO EVIDENCE.

11 I THOUGHT THAT WAS YOUR HONOR'S RULING ON THE  
12 EXPERTS' REPORTS.

13 THE COURT: WELL, I DON'T REMEMBER THAT, MR.  
14 DUBUC.

15 DO YOU HAVE A DIFFERENT RECOLLECTION, MR. MC MANUS?

16 MR. MC MANUS: I DON'T HAVE A RECOLLECTION, EITHER,  
17 SIR.

18 MR. CONNERS: HERE IT IS, YOUR HONOR. THAT  
19 WAS YOUR GENERAL RULING ON THE USE OF THE REPORTS.

20 THE COURT: WHICH EXHIBIT ARE WE TALKING ABOUT,  
21 235?

22 MR. PIPER: YES, SIR.

23 THE COURT: IT SAYS CROSS-EXAMINATION.

24 MS. ORR: YOU HAVE MADE SOME MORE RULINGS RECENTLY,  
25 YOUR HONOR.

1 THE COURT: I HAVE IN MY LONGHAND "RECEIVED."

2 MR. CONNERS: YOUR HONOR, WE DISCUSSED GENERALLY  
3 THE USE OF REPORTS BY EXPERTS ON EITHER SIDE, THEREAFTER,  
4 AND IT WAS SUBJECT TO YOUR HONOR'S INITIAL RULING.

5 MR. DUBUC: YOUR HONOR, IF WE ARE GOING TO HAVE  
6 THE REPORTS OF EXPERTS IN, THAT IS ONE THING.

7 BUT WHAT I HAVE STATED WAS OUR UNDERSTANDING.  
8 I THOUGHT I WOULD RAISE IT NOW, BECAUSE IT WAS THE FIRST  
9 ONE THAT WAS OFFERED.

10 THE COURT: YOU DO NOT HAVE THAT UNDERSTANDING,  
11 MR. MC MANUS?

12 MR. MC MANUS: I DID NOT CATCH THE LAST PART  
13 OF WHAT HE SAID, YOUR HONOR.

14 THE COURT: HIS UNDERSTANDING WAS THAT I HAD  
15 PRECLUDED ALL REPORTS BY EXPERTS.

16 MR. DUBUC: EXCEPT FOR CROSS-EXAMINATION.

17 MR. MC MANUS: THAT WAS NOT OUR UNDERSTANDING,  
18 OR I WOULD NOT HAVE INTRODUCED IT, YOUR HONOR, IF FOR NO  
19 OTHER REASON THAN TO SAVE OURSELVES THE EMBARRASSMENT OF  
20 COMING UP AND ASKING THAT IT BE INTRODUCED, KNOWING THAT  
21 IT WAS ALREADY GOING TO BE REJECTED.

22 THE COURT: ARE YOU GOING TO CROSS-EXAMINE HIM  
23 FROM IT?

24 MR. DUBUC: YES, I AM GOING TO CROSS-EXAMINE  
25 HIM FROM IT.

1 THE COURT: WHY DO YOU NOT CROSS-EXAMINE HIM FOR  
2 A FEW MINUTES, AND I WILL LOOK AT THE TRANSCRIPTS THAT YOU  
3 ARE TALKING ABOUT BEFORE I RULE ON ITS ADMISSIBILITY.

4 MR. CONNORS: YOUR HONOR, PERHAPS WE CAN TAKE A RECESS  
5 AT THIS TIME. WE HAVE TO SET UP TO SHOW SOME SLIDES.

6 MR. DUBUC: WE ARE GOING TO USE PICTURES ON CROSS-  
7 EXAMINATION, ALSO.

8 THE COURT: HOW LONG WILL THAT TAKE?

9 MR. CONNORS: JUST TIME ENOUGH TO GET THE SCREEN  
10 UP, YOUR HONOR.

11 THE COURT: WHAT TIME DOES THE JURY GET ITS COFFEE?

12 MS. TRUMBO: ELEVEN O'CLOCK.

13 THE COURT: GO AHEAD. WE WILL JUST WAIT RIGHT  
14 HERE.

15 CAN YOU NOT GO ON TO SOMETHING ELSE, AND THEN  
16 DO THAT?

17 MR. DUBUC: I CAN DO SOME PRELIMINARIES, YOUR  
18 HONOR.

19 THE COURT: ALL RIGHT. AND THEN AT THE RECESS  
20 YOU CAN SET THAT UP.

21 ( OPEN COURT )

22 THE COURT: YOU MAY GO AHEAD.

23 MR. DUBUC: THANK YOU, YOUR HONOR.

24 CROSS-EXAMINATION

25 BY MR. DUBUC:

1 Q. GOOD MORNING, DOCTOR.

2 A. GOOD MORNING.

3 Q. DOCTOR, YOU JUST MENTIONED, AND REFERRED TO,  
4 SOME LASER- OR COMPUTER-ENHANCED PHOTOGRAPHS YOU LOOKED  
5 AT?

6 A. YES.

7 Q. IS THAT CORRECT?

8 A. YES.

9 Q. AS A MATTER OF FACT, THERE ARE SEVERAL METHODS  
10 THAT YOU USE, AS A PHOTOGRAMMETRIST, FOR LOOKING AT PICTURES?

11 I DON'T MEAN IN THIS PARTICULAR CASE. I MEAN GENERALLY.

12 AND YOU MIGHT DO MEASUREMENTS, AS YOU HAVE DONE IN THIS  
13 CASE, AS I UNDERSTAND IT, WITH A MAGNIFYING GLASS WITH  
14 A SCALE ON IT; IS THAT CORRECT?

15 A. THAT IS CORRECT, YES.

16 Q. THAT IS WHAT YOU DID IN THIS CASE?

17 A. THAT IS CORRECT.

18 Q. BUT THERE ARE OTHER METHODS. YOU JUST REFERRED  
19 TO ONE, THE HIGH-ALTITUDE-AERIAL-PHOTO-ENHANCED PICTURES?

20 A. THAT IS CORRECT.

21 Q. AND YOU USED THOSE TO CONFIRM, OR IN SOME WAY  
22 REINFORCE, PARTS OF YOUR OPINION. IS THAT WHAT YOU HAVE  
23 JUST TOLD US?

24 A. WELL, ONE USES DIFFERENT KINDS OF ENHANCEMENTS  
25 FOR DIFFERENT KINDS OF PURPOSES.

1 Q. BUT THE ONES YOU LOOKED AT IN THIS CASE, YOU  
2 USED -- I THOUGHT I JUST UNDERSTOOD YOU TO SAY YOU USED  
3 THOSE TO CONFIRM OR CORROBORATE PARTS OF YOUR OPINION?

4 A. OH, BY "THOSE," YOU MEAN THE LASER ENHANCEMENTS?

5 Q. YES.

6 A. I REVIEWED THEM TO SEE IF THERE WAS ANY SIGNIFICANT  
7 EFFECT ON THE RESULTS I HAD OBTAINED FROM MY ANALYSIS.

8 Q. OKAY.

9 SO YOU USED THEM AS PART OF A CHECKING PROCESS; IS  
10 THAT CORRECT?

11 A. YES.

12 Q. OKAY.

13 NOW, I SEE IN YOUR RESUME, YOUR C. V., WHICH WAS SUBMITTED  
14 AS PLAINTIFFS' EXHIBIT 88, THAT YOU ALSO HAVE SOME PUBLICATIONS  
15 AND SOME ARTICLES ON REMOTE SENSING; AND THAT YOU HAVE  
16 USED THAT?

17 A. YES, SIR.

18 Q. AND, BASICALLY, REMOTE SENSING, WOULD THAT BE  
19 THE USE OF SOME KIND OF COMPUTERIZED PHOTOGRAPHIC SENSING  
20 FOR SETTING UP FIELDS AND BOUNDARIES, AND THAT SORT OF  
21 THING?

22 A. THAT IS CORRECT.

23 Q. FROM WHICH FIELDS AND BOUNDARIES YOU MAKE MEASUREMENTS  
24 SIMILAR TO THE ONES YOU HAVE MADE; IS THAT CORRECT?

25 A. NORMALLY, NO. NORMALLY, COMPUTER ENHANCEMENTS

1 ARE USED FOR PURPOSES OF AREA-EXTENSIVE IDENTIFICATION,  
2 WHAT ARE REFERRED TO AS AREA-EXTENSIVE IDENTIFICATION.

3 IF I MIGHT GIVE YOU AN EXAMPLE, IN AGRICULTURAL AREAS  
4 ONE MIGHT BE INTERESTED IN FINDING OUT HOW MANY ACRES OF  
5 WHEAT AND OATS AND CORN AND SOYBEANS ARE ALL GROWING IN  
6 A REGION.

7 AND THESE COMPUTER ENHANCEMENTS ARE OFTEN USED FOR  
8 THAT PURPOSE: TO HELP ONE IDENTIFY ONE CROP AND DISTINGUISH  
9 IT FROM ANOTHER.

10 ENHANCEMENTS FOR MAKING LINEAR MEASUREMENTS OF THE  
11 TYPE THAT WE ARE TALKING ABOUT HERE ARE NOT VERY COMMON.

12 Q. BUT YOU HAVE HEARD OF IT BEING USED; HAVE YOU  
13 NOT?

14 A. FOR LINEAR MEASUREMENTS?

15 Q. YES.

16 A. I CAN THINK OF SEVERAL EXAMPLES OF ENHANCEMENTS  
17 FOR THE DETECTION OF LINEAR ELEMENTS ON THE GROUND, BUT  
18 NOT NECESSARILY THE MEASUREMENT OF THOSE ELEMENTS.

19 Q. ALL RIGHT.

20 THEY HAVE BEEN USED TO PRODUCE MAPS, LAYOUT MAPS,  
21 AND THAT SORT OF THING? REMOTE SENSING HAS BEEN USED FOR  
22 THAT; HAS IT NOT?

23 A. YES. THERE ARE VARIOUS KINDS OF MAPS, HOWEVER.

24 Q. YOU ARE FAMILIAR WITH THE MANUAL OF PHOTOGRAMMETRY -

25 A. THAT IS CORRECT.

1 Q. (CONTINUING) -- WHICH IS FROM THE ASSOCIATION

2 TO WHICH YOU BELONG?

3 A. YES, SIR.

4 Q. IS THAT CORRECT?

5 A. THAT IS CORRECT.

6 Q. AND, CERTAINLY, THEY REFER TO REMOTE SENSING  
7 IN THAT MANUAL; DO THEY NOT, SIR?

8 A. THAT IS CORRECT.

9 Q. SO THAT IS A METHOD; IS IT NOT -- WITHDRAWN.  
10 ARE YOU FAMILIAR, DOCTOR, WITH THE REMOTE-SENSING  
11 OR COMPUTERIZED PHOTOGRAMMETRY METHODS USED BY THE ITEK  
12 CORPORATION?

13 A. I AM NOT INTIMATELY FAMILIAR WITH THEM. I KNOW  
14 OF THE ITEK CORPORATION.

15 Q. THEY ARE WELL KNOWN ENOUGH TO BE SPECIFICALLY  
16 REFERRED TO IN THAT MANUAL WE JUST TALKED ABOUT. ARE  
17 YOU FAMILIAR WITH THAT?

18 A. I AM FAMILIAR WITH THE MANUAL, YES, SIR.

19 Q. ARE YOU FAMILIAR WITH THE FACT THAT THEY ARE  
20 REFERRED TO IN THERE?

21 A. I WOULDN'T HAVE ANY DOUBT THAT THEY WOULD BE,  
22 SIR.

23 Q. SO THEIR METHOD AND THEIR INVOLVEMENT IN THIS  
24 FIELD IS CERTAINLY KNOWN TO MEMBERS OF THE AMERICAN SOCIETY  
25 OF PHOTOGRAMMETRY, OF WHICH YOU ARE A MEMBER; IS THAT CORRECT?

1 A. MY UNDERSTANDING OF THE ITEK CORPORATION IS THAT  
2 THEY MAKE CAMERAS. WHATEVER ELSE THEY DO, I DON'T KNOW,  
3 SIR.

4 Q. YOU ARE NOT FAMILIAR WITH THE FACT THAT THEY  
5 HAVE SYSTEMS AND USE THESE METHODS IN PHOTO-ANALYSIS?

6 THE COURT: MR. DUBUC, WHY DON'T YOU QUALIFY  
7 YOUR WITNESS ON YOUR EXAMINATION.

8 HE DOESN'T KNOW ABOUT THAT, AND YOU ARE TESTIFYING.

9 MR. DUBUC: WELL, YOUR HONOR, HE IS A MEMBER  
10 OF THIS ORGANIZATION.

11 THE COURT: HE MAY BE A MEMBER OF THAT ORGANIZATION,  
12 BUT HE SAYS HE ISN'T FAMILIAR WITH THAT BOOK.

13 I AM A MEMBER OF THE AMERICAN BAR ASSOCIATION.  
14 I DON'T KNOW EVERYTHING THEY DO.

15 MR. DUBUC: ALL RIGHT, YOUR HONOR.

16 BY MR. DUBUC:

17 Q. NOW, SIR, ARE YOU ALSO FAMILIAR WITH THE METHODS  
18 OF STEREOSCOPY FOR MAKING MAKING COMPARISONS OF ELEVATIONS?

19 A. YES, SIR.

20 Q. THAT IS ALSO SOMETHING THAT YOUR ASSOCIATION --

21 A. THAT IS CORRECT.

22 Q. (CONTINUING) -- HAS IN ITS MANUAL; IS IT NOT?

23 A. THAT IS CORRECT.

24 Q. AND THAT IS, IS IT NOT, A METHOD, PERHAPS, LET'S  
25 SAY, A LITTLE MORE SOPHISTICATED METHOD; RATHER THAN JUST

1 VIEWING PHOTOGRAPHS, A METHOD OF MEASURING ELEVATIONS?

2 THE COURT: MR. DUBUC, I DON'T THINK YOU OUGHT  
3 TO BE TESTIFYING.

4 IF YOU WANT TO ASK QUESTIONS, ASK HIM. BUT  
5 YOU ARE TELLING FACTS HERE THAT HAVEN'T BEEN ADDUCED IN  
6 EVIDENCE.

7 MR. DUBUC: NO, YOUR HONOR. I AM ASKING HIM:  
8 IS THAT A METHOD?

9 I AM ASKING THAT ON CROSS-EXAMINATION.

10 THE COURT: WELL, IF YOU WANT TO PROVE THAT IN  
11 YOUR CASE, FINE.

12 BUT HE HAS NOT TESTIFIED ABOUT THAT.

13 MR. DUBUC: WELL, YOUR HONOR, HE HAS TESTIFIED  
14 ABOUT HOW HE MEASURED ELEVATIONS.

15 THE COURT: EXACTLY. AND HE HAS. SO EXAMINE  
16 HIM ABOUT THAT.

17 MR. DUBUC: AND I WANT TO ASK HIM IF THERE ARE  
18 OTHER METHODS, AND IF HE USED THEM.

19 THE COURT: WELL, ASK HIM, BUT DON'T TELL HIM  
20 WHAT THEY ARE.

21 IF HE DOESN'T KNOW WHAT THEY ARE, HE DOESN'T  
22 NEED TO HEAR IT FROM YOU.

23 BY MR. DUBUC:

24 Q. DOCTOR, DO YOU KNOW ABOUT THE METHOD OF USING  
25 STEREOSCOPY FOR MAKING TRANSPARENCIES AND MEASURING ELEVATIONS

1 BY THAT METHOD?

2 A. YES, SIR.

3 Q. DID YOU USE THAT METHOD IN THIS CASE?

4 A. NO, SIR.

5 Q. NOW, DOCTOR, AS I UNDERSTAND THE METHOD THAT  
6 YOU USED IN THIS CASE, ABOUT WHICH YOU HAVE TOLD US, YOU  
7 HAD SOME PICTURES OF THE ACCIDENT SCENE FROM WHICH YOU  
8 DID SOME MEASUREMENTS; IS THAT CORRECT?

9 A. YES, SIR.

10 Q. AND, IN MAKING THOSE MEASUREMENTS, AM I CORRECT  
11 THAT YOU SELECTED CERTAIN THINGS IN THE PICTURES? I THINK  
12 YOU MENTIONED A TIRE; I THINK YOU MENTIONED A T-TAIL; I  
13 THINK YOU MENTIONED THE TROOP COMPARTMENT; AND I THINK  
14 YOU MENTIONED A PERSON OF A CERTAIN HEIGHT; IS THAT CORRECT?

15 A. THAT IS CORRECT.

16 Q. NOW, YOU HAVE SHOWN THE JURY SOME EIGHT-BY-TEN  
17 PICTURES. ARE THOSE THE ONES ATTACHED TO YOUR REPORT  
18 IN FRONT OF YOU?

19 A. IF YOU ARE REFERRING TO THIS SERIES OF EIGHT-  
20 BY-TEN BLACK-AND-WHITES, THESE ARE THE ONES CONTAINED IN  
21 MY REPORT. THAT IS CORRECT.

22 Q. AND THOSE ARE THE ONES YOU USED -- THOSE EIGHT-  
23 BY-TENS ARE NOT THE ONES YOU USED IN MAKING THE MEASUREMENTS;  
24 IS THAT CORRECT?

25 A. THAT IS CORRECT.

1 Q. YOU USED SMALLER ONES?

2 A. THAT IS CORRECT.

3 Q. FIVEN-BY-SEVENS?

4 A. THAT IS CORRECT.

5 Q. THIS SIZE?

6 A. YES, THAT IS CORRECT.

7 Q. IS THAT CORRECT?

8 A. YES, SIR.

9 Q. ALL RIGHT.

10 NOW, FOR EXAMPLE, I THINK YOU MENTIONED ON FRIDAY  
11 THAT YOU MEASURED A TIRE WHICH WAS FROM PLAINTIFFS' EXHIBIT  
12 1000-110.

13 IS THAT CORRECT?

14 MR. DUBUC: AND, YOUR HONOR, IF I MAY APPROACH  
15 THE WITNESS, I WOULD LIKE TO SHOW IT TO HIM.

16 THE COURT: CERTAINLY.

17 BY MR. DUBUC:

18 Q. IS THAT THE PICTURE YOU USED TO MEASURE THE TIRE?

19 MR. MC MANUS: EXCUSE ME. YOUR HONOR, MAY WE  
20 APPROACH THE BENCH?

21 THE COURT: DO YOU HAVE AN OBJECTION?

22 MR. MC MANUS: YES, SIR.

23 THE COURT: ALL RIGHT. THEN, COME TO THE BENCH.

24 ( AT THE BENCH )

25 MR. MC MANUS: JUDGE, THAT WAS THE ONLY SIZE

1 PHOTOGRAPH THAT WE HAD BEEN GIVEN AT THE TIME.

2 THE COURT: SO WHAT?

3 MR. MC MANUS: SO I THINK MR. DUBUC IS GOING  
4 TO GET INTO THE AREA --

5 THE COURT: HE IS GOING TO LOSE HIS HEAD WHEN  
6 HE DOES.

7 MR. DUBUC: I AM JUST GOING TO ASK HIM IF THAT  
8 IS THE --

9 THE COURT: WHEN YOU START TWISTING THESE WITNESSES  
10 AROUND ABOUT THE QUALITY OF THE DOCUMENTS THAT THEY HAD,  
11 I AM GOING TO BLOW YOU OUT OF THE WATER.

12 MR. DUBUC: WELL, YOUR HONOR, HE HAD THE EIGHT-  
13 BY-TENS BY THE TIME HE MADE HIS REPORT. IF HE NEEDED  
14 TO RECHECK ANYTHING, HE COULD HAVE.

15 ALSO, IF HE HAD WANTED TO BLOW THE PICTURES UP,  
16 HE COULD HAVE DONE THAT IN ONE DAY.

17 I AM NOT GOING TO GET INTO A LONG DISCUSSION  
18 WITH THE WITNESS. I JUST WANT TO ASK HIM ABOUT THE METHOD  
19 WHICH HE USED.

20 THE COURT: I JUST WANT TO TELL YOU, MR. DUBUC,  
21 THAT THIS IS THE LAST TIME. IF YOU COME CLOSE TO THIS  
22 CLIFF, OVER YOU GO.

23 MR. DUBUC: I JUST WANT THE JURY TO UNDERSTAND  
24 HOW HE DID THIS. I AM ASKING HIM ABOUT HIS METHOD, ABOUT  
25 HOW HE DID IT.

1 THE COURT: THAT IS THE LAST WARNING. DO YOU  
2 UNDERSTAND THAT?

3 MR. DUBUC: BUT IS IT PERMISSIBLE TO DO THAT?

4 THE COURT: THAT IS PERMISSIBLE, BUT I JUST SAID  
5 YOU HAVE HAD YOUR LAST WARNING.

6 MR. DUBUC: YES, YOUR HONOR.

7 I JUST WANT TO USE ONE EXAMPLE. THAT IS WHAT  
8 I AM TRYING TO DO. I AM MERELY ASKING HIM WHAT HE DID.

9 THE COURT: ALL RIGHT. BUT I HAVE TOLD YOU THAT  
10 THAT IS YOUR LAST WARNING. YOU UNDERSTAND THAT?

11 MR. DUBUC: YES, YOUR HONOR.

12 THE COURT: VERY WELL.

13 ( OPEN COURT )

14 BY MR. DUBUC:

15 Q. SIR, IS THAT THE FIVE-BY-SEVEN PICTURE YOU USED  
16 IN MAKING YOUR MEASUREMENT? I WOULD JUST LIKE TO USE ONE  
17 EXAMPLE.

18 A. THIS IS NOT THE PICTURE I USED.

19 Q. IT IS NOT?

20 A. IT IS A REPRODUCTION, I BELIEVE, FROM THE SAME  
21 SOURCE. BUT THE PICTURE I USED HAS MY MARKINGS ON IT.

22 Q. ALL RIGHT.

23 ARE YOU SATISFIED, FROM LOOKING AT THAT AND COMPARING  
24 IT TO THE ONE YOU HAVE IN FRONT OF YOU, THAT IT IS THE  
25 SAME SCENE AND THE SAME PICTURE?

1 A. YES.

2 Q. DO YOU HAVE THE ONE YOU USED WITH YOU?

3 A. NO, SIR, I DON'T.

4 Q. WELL, ARE YOU SATISFIED THAT IT IS THE SAME,  
5 A REPRODUCTION OF THE SAME?

6 A. IT IS A REPRODUCTION OF THE SAME PHOTOGRAPH.

7 Q. OKAY.

8 AND, AS I UNDERSTAND IT, THE MEASUREMENTS WERE MADE  
9 WITH A MAGNIFYING GLASS WITH A SCALE IN IT; IS THAT CORRECT?

10 A. THAT IS CORRECT.

11 Q. SO YOU USED THIS, FOR EXAMPLE, TO LOOK AT THAT  
12 TIRE AND MEASURE IT; IS THAT THE IDEA?

13 A. YES.

14 Q. IS THAT CORRECT?

15 A. THAT IS CORRECT.

16 Q. NOW, DO I ALSO UNDERSTAND THAT AFTER YOU -- WITHDRAWN.

17 NOW, IS THE REASON YOU MEASURED THAT TIRE TO GET SOME  
18 KIND OF A REFERENCE POINT BEFORE YOU PLOT THE ENTIRE FIELD  
19 IN GREATER DISTANCES BETWEEN POINTS ON, SAY, THE CHARTS  
20 THAT YOU PREPARED?

21 A. IT IS A METHOD OF REFERENCING, SO THAT YOU CAN,  
22 SO TO SPEAK, GET INTO THE PHOTOGRAPH TO MAKE OTHER MEASUREMENTS.

23 Q. OKAY.

24 AND WITH RESPECT TO THAT TIRE, AS I UNDERSTOOD YOUR  
25 TESTIMONY, I UNDERSTOOD THAT YOU TOOK ANOTHER MEASUREMENT

1 FROM ANOTHER DIAGRAM. I THINK IT WAS A DEFENDANTS' EXHIBIT,  
2 D-1217 OR 1216?

3 A. YES, I DID USE ANOTHER DIAGRAM, AND IT WAS DEFENDANTS'  
4 EXHIBIT D-1216.

5 Q. OKAY.

6 NOW, I WOULD LIKE TO SHOW THAT TO YOU, SO MAYBE YOU  
7 CAN TELL THE JURY HOW YOU DID THAT.

8 MR. DUBUC: MAY I STAND OVER HERE, YOUR HONOR?

9 THE COURT: CERTAINLY, MR. DUBUC.

10 BY MR. DUBUC:

11 Q. PERHAPS, DOCTOR, IF YOU COULD -- YOU MAY NOT  
12 BE ABLE TO SEE IT FROM THERE.

13 THE COURT: ROTATE IT JUST ABOUT A MILLIMETER.  
14 THANK YOU. THAT IS FINE.

15 Q. CAN YOU SHOW THE JURY WHAT MEASUREMENTS YOU USED  
16 PURPORTEDLY TO MEASURE THE TIRE?

17 A. I USED THIS THREE-FEET-NINE-INCHES, WHICH WAS  
18 THE DIMENSION AS SHOWN HERE.

19 Q. NOW, DOES THAT LINE WITH THREE-FEET-NINE-INCHES  
20 RUN AND TOUCH THE WHEELS, OR DOES IT RUN TOWARD THE BOTTOM  
21 OF THE AIRPLANE?

22 A. WELL, IT IS HARD TO TELL. I SUPPOSE, IF I WERE  
23 TO PUT A STRAIGHTEDGE ON HERE, IT WOULD LIKE UP WITH THE  
24 BOTTOM OF THE FUSELAGE, IF THAT IS THE CORRECT TERMINOLOGY,  
25 SIR.

1 Q. AND DID YOU MAKE ANY INQUIRY FROM ANY OF THOSE  
2 WITH WHOM YOU CONSULTED IN PREPARING YOUR REPORT AS TO  
3 WHETHER OR NOT THAT WAS A MEASUREMENT TO THE BOTTOM OF  
4 THE AIRPLANE, IN OTHER WORDS, GROUND CLEARANCE, OR A MEASUREMENT  
5 OF THE TIRE?

6 A. I DEDUCED FROM THE WAY IT WAS DRAWN THAT IT IS  
7 A MEASUREMENT OF THE TIRE.

8 Q. NOBODY TOLD YOU THAT IS A MEASUREMENT OF THE  
9 TIRE; IS THAT CORRECT?

10 A. THAT IS CORRECT.

11 Q. ALL RIGHT.

12 NOW, I THINK YOU SAID YOU ALSO USED EXHIBIT D-1217;  
13 IS THAT CORRECT?

14 A. YES, SIR.

15 Q. OKAY.

16 AND WHAT WAS IT THAT YOU USED THAT FOR, SIR?

17 A. I USED IT TO GET THIS DIMENSION OF 232 INCHES  
18 FOR THE AFT END OF COMPARTMENT E, WHICH IS SHOWN ON THE  
19 LOWER PART OF THE DIAGRAM.

20 Q. OKAY.

21 NOW, DID YOU HAPPEN TO NOTE ON THAT EXHIBIT ANYTHING  
22 ABOUT THE TIRES, AS YOU WERE EXAMINING IT?

23 A. NO, I DIDN'T NOTICE ANYTHING ABOUT THE TIRES.

24 Q. DID YOU NOTICE, FOR EXAMPLE, THAT THE FRONT TIRE,  
25 THE NOSE TIRE, IS ROUND; AND THAT THE MAIN-LANDING-GEAR

1 TIRES HERE ARE NOT ROUND ON BOTH ENDS, BUT ONE END SHOWS  
2 FLAT, AND ANOTHER END SHOWS IT MIGHT BE UP IN THE WHEEL  
3 WELL?

4 A. IF I FOLLOW THAT ARGUMENT, IT IS FLAT ON BOTH  
5 SIDES.

6 IF I DEDUCE THAT IT IS FLAT HERE, WHY SHOULD I DEDUCE  
7 THAT IT IS UP IN THE WHEEL COMPARTMENT THERE AND NOT A  
8 SQUARE TIRE?

9 Q. WELL, ONE OF THE REASONS IS BECAUSE THE DIAGRAM,  
10 IF YOU NOTED -- AND YOU SHARE THIS WITH ME -- SHOWS DOTTED  
11 LINES FOR THESE TWO WHEELS UP IN THE FUSELAGE. DO YOU  
12 SEE THAT?

13 A. IT SHOWS WHAT LOOKS LIKE A DASHED LINE UP THERE.

14 Q. YES.

15 DID YOU ASK ANYBODY ABOUT THAT, SIR?

16 A. NO, I DID NOT.

17 Q. NO.

18 NOW, DOCTOR, ISN'T IT A FACT THAT THIS IS YOUR FIRST  
19 EXPERIENCE AS A CONSULTATION IN CONNECTION WITH AN AIRPLANE  
20 ACCIDENT?

21 A. YES.

22 Q. AND YOU HAVE NO KNOWLEDGE --

23 THE COURT: DOCTOR, YOU CAN GO BACK TO THE WITNESS  
24 STAND.

25 BY MR. DUBUC:

1 BY MR. DUBUC:

2 Q. YES. YOU MAY RESUME YOUR SEAT.

3 AND YOU HAVE NO KNOWLEDGE, DO YOU, SIR, OF AERONAUTICAL  
4 MATTERS, OR AERONAUTICAL ENGINEERING, OR ANYTHING OF THAT  
5 NATURE?

6 A. NO PROFESSIONAL EXPERIENCE. THAT IS TRUE,  
7 SIR.

8 Q. NOW, IN CONNECTION WITH SOME OF YOUR OTHER  
9 TASKS, IF THERE ARE TECHNICAL MATTERS, OR, FOR EXAMPLE, I  
10 THINK YOU TOLD US ONE TIME AT YOUR DEPOSITION YOU USED  
11 AERIAL PHOTOS, AND THEN YOU WOULD HAVE ON THE GROUND SOME  
12 WAY OF CROSS-CHECKING WHAT YOU WERE DOING, A SOIL PIT, OR  
13 SOMETHING OF THAT NATURE; IS THAT CORRECT?

14 A. YES.

15 Q. AND YOU CROSS-CHECKED WITH WHOEVER WAS WORKING  
16 IN THAT AREA. AND YOU WOULD GET IT ALL SET UP THE WAY YOU  
17 WANTED IT, AS YOUR CHECK POINT; IS THAT CORRECT?

18 A. YES.

19 Q. DID YOU DO THAT IN THIS CASE, WHEN YOU PICKED  
20 THAT WHEEL, AND DETERMINED THE DIAMETER OF THAT WHEEL?

21 A. I DID NOT. I ASSUMED THAT THE DIMENSIONS,  
22 AS GIVEN ON D-1216, WERE REPRESENTATIVE OF THE TYPICAL  
23 CONDITION OR SIZE OF THE TIRE ON THAT PARTICULAR AIRCRAFT,  
24 SIR.

25 Q. NOW, SIR, HAVE YOU HAD OCCASION TO SEE A DOCUMENT

1 OF DECEMBER 14, 1981, WHICH IS A MEMORANDUM FROM MR. EDWARDS,  
2 AND WHICH POINTS OUT THE PARTICULAR PROBLEMS WE HAVE JUST  
3 BEEN DISCUSSING, AS TO YOUR MEASUREMENT OF THE WHEEL, BEFORE  
4 YOU CAME IN HERE TO TESTIFY FRIDAY? HAVE YOU SEEN THAT?

5 A. YES, SIR. I HAVE.

6 Q. AND DID YOU EXAMINE IT?

7 A. YES, SIR.

8 Q. ALL RIGHT.

9 AND THAT INDICATES THAT THE DIAMETER OF THE WHEEL IS  
10 NOT 3.75 FEET, AS YOU HAVE MEASURED IT: BUT, IN FACT, 4.02  
11 FEET; IS THAT CORRECT?

12 MR. MC MANUS: YOUR HONOR, I OBJECT TO THE USE  
13 OF THAT DOCUMENT. IT IS NOT IN EVIDENCE, AND, AS DR.  
14 MORAIN, TESTIFIED --

15 MR. DUBUC: YOUR HONOR, HE JUST SAID THAT HE  
16 HAD EXAMINED IT.

17 THE COURT: YOU COME BACK AND LET HIM LOOK AT IT,  
18 AND WE WILL ADJOURN.

19 MR. DUBUC: ALL RIGHT, YOUR HONOR.

20 THE COURT: YOU MAY STEP DOWN, DOCTOR. EXCUSE  
21 THE JURY.

22 (WHEREUPON, A BRIEF RECESS WAS TAKEN. AFTER WHICH  
23 THE FOLLOWING PROCEEDINGS WERE HAD:)

1 THE COURT: I'VE BEEN BACK THROUGH MY NOTES  
2 ABOUT THESE PRETRIAL RULINGS ON THESE REPORTS AND I FIND THAT  
3 I HAD GENERALLY RULED THAT THEY WOULD BE ADMISSIBLE FOR  
4 CROSS EXAMINATION -- USED FOR CROSS EXAMINATION ON THE  
5 ASSUMPTION THAT THE TESTIMONY THAT THE JURY WOULD HEAR WOULD  
6 BE WHAT THE WITNESS SAID.

7 IF YOU ALL WANT TO REVISIT THAT I'LL BE GLAD TO  
8 DO IT.

9 WE'LL PROCEED NOW WITH THEM AVAILABLE TO YOU FOR  
10 CROSS EXAMINATION AND VICE VERSA -- YOURS REPORT WILL BE  
11 AVAILABLE TO THEM FOR CROSS EXAMINATION.

12 I'LL REVISIT THIS WHEN YOU ALL HAVE AN OPPORTUNITY  
13 TO REFRESH YOURSELVES ON WHAT YOU THINK I WAS DOING AND THE  
14 EXTENT TO WHICH ONE OR THE OTHER OF YOU MAY HAVE MISUNDER-  
15 STOOD IT, AND IF YOU MISUNDERSTOOD IT, PREJUDICED BY THE  
16 MISUNDERSTANDING.

17 MR. DUBUC: ALL RIGHT, YOUR HONOR.

18 THE COURT: ANY OTHER PRELIMINARY MATTERS?

19 MR. MC MANUS: NO, SIR.

20 THE COURT: BRING BACK THE JURY.

21 DR. MORAIN. THERE YOU ARE.

22 (WHEREUPON, THE JURY ENTERS THE COURTROOM AND  
23 TAKES THEIR SEATS IN THE JURY BOX.)

24 THE COURT: YOU MAY INQUIRE, MR. DUBUC.

25 MR. DUBUC: THANK YOU, YOUR HONOR.

1 BY MR. DUBUC:

2 Q DOCTOR, JUST BEFORE THE BREAK WE WERE TALKING  
3 ABOUT THE TIRE AND THE MEASUREMENT OF THE TIRE. DO YOU  
4 REMEMBER THOSE QUESTIONS?

5 A YES, SIR.

6 Q NOW, I HAD ASKED YOU ABOUT THIS MR. EDWARDS'S  
7 EXHIBIT, WHICH WE MARKED FOR IDENTIFICATION D1407, AND I  
8 THINK MY QUESTION WAS RELATED TO THE FACT THAT WHETHER OR NOT  
9 YOU HAD REVIEWED THAT OR SEEN IT BEFORE YOU TESTIFIED LAST  
10 FRIDAY.

11 A YES, SIR.

12 Q AND YOU WERE SHOWN THAT BY COUNSEL FOR THE  
13 PLAINTIFFS?

14 A THAT'S CORRECT.

15 Q NOW, THAT EXHIBIT SUGGESTS THAT THE WHEEL  
16 DIAMETER IS 4.02 FEET, INSTEAD OF 3.75; IS THAT CORRECT?

17 A THAT IS THE STATEMENT MADE IN THE FIRST  
18 PARAGRAPH.

19 Q AND IT REFERS TO THE FACT THAT THE DIAMETER CAN  
20 BE CHECKED IN THE VARIOUS PUBLICATIONS AND WHATEVER; IS THAT  
21 CORRECT?

22 A THAT IS CORRECT.

23 Q DID YOU CHECK IT?

24 A DID I CHECK -- ?

25 Q TO SEE WHETHER THE DIAMETER WAS IN FACT 4.02 FEET

1 IN ANY PUBLICATION? DID YOU ASK ANYBODY TO DO THAT?

2 A MY DIMENSION CAME FROM DEFENDANTS' EXHIBIT 1216,  
3 I THINK.

4 Q THAT'S THAT -- THAT'S WHAT YOU JUST TOLD US YOU  
5 HAD DONE, MEASURING TO THE BOTTOM OF THE FUSELAGE, AND SO  
6 ON; IS THAT CORRECT?

7 A THAT IS CORRECT.

8 Q DOCTOR, AM I CORRECT THAT WHEN YOU MAKE THAT  
9 MIDDLE TIRE MEASUREMENT YOU USED THAT MEASUREMENT IN YOUR  
10 REPORT, AND I THINK IN YOUR OPINION FRIDAY AND TODAY, YOU  
11 USED IT IN SETTING UP FIELD BOUNDARIES FOR GREATER DISTANCES  
12 ON OTHER PICTURES; IS THAT CORRECT?

13 A THAT IS CORRECT.

14 Q AND THOSE GREATER DISTANCES, AMONG THEM, WERE  
15 THE FIELD BOUNDARIES, IN THE CASE OF THE TIRE, WHERE YOU  
16 MEASURED THE LENGTH OF THE TRACK ON THE EAST SIDE OF THE  
17 RIVER PURPORTEDLY MADE BY A PART OF THIS AIRPLANE; IS THAT  
18 CORRECT?

19 A THAT'S CORRECT.

20 Q AND I BELIEVE -- WITHDRAWN.

21 WHAT WAS THE DISTANCE OF THAT TRACK YOU CAME UP  
22 WITH, USING THE DIMENSION 3.75 INCHES FOR THE TIRE?

23 A THREE POINT SEVEN FIVE FEET.

24 Q I'M SORRY -- 3.75 FEET.

25 A THE DIMENSION THAT I HAVE CALCULATED AND WHICH IS

1 CONTAINED IN MY REPORT ACTUALLY CAME OUT TO BE 107 FEET,  
2 BUT IN THE REPORTING OF THAT; AND AS IT IS SHOWN ON THE  
3 REVISED WRECKAGE DIAGRAM, AND REALIZING THAT THERE IS SOME  
4 GIVE AND TAKE IN ALL OF THESE MEASUREMENTS, I THINK THE  
5 REVISED WRECKAGE DIAGRAM SHOWS IT AS 110 FEET.

6 Q HOW MUCH?

7 A ONE HUNDRED TEN FEET.

8 Q ALL RIGHT. THAT WAS A CORRECTION MADE, IF I  
9 UNDERSTOOD YOUR REPORT CORRECTLY, BECAUSE YOU HAD TO MAKE  
10 A COSIGN CORRECTION BECAUSE THERE WASN'T A PICTURE THAT WAS  
11 EXACTLY LEVEL, SOMETHING OF THAT NATURE; IS THAT CORRECT?

12 A NO, SIR. THAT CORRECTION DIDN'T RESULT FROM THAT  
13 REQUIREMENT.

14 Q ALL RIGHT. NOW, DOCTOR, IF YOU ASSUME -- AND FOR  
15 THE PURPOSES OF THIS QUESTION I WANT YOU TO ASSUME THAT THE  
16 TIRE DIMENSION IS ACTUALLY 4.02 FEET -- CAN YOU TELL ME HOW  
17 LONG THE MARK ON THE EAST SIDE OF THE RIVER WOULD HAVE  
18 COMPUTED TO UNDER THE METHOD YOU USED?

19 A IF I ASSUME THAT THE TIRE IS 4.02 -- WHICH IS IN  
20 MY OPINION NOT A VERY GOOD ASSUMPTION -- .

21 Q WHAT'S THE BASIS OF THAT.

22 THE COURT: LET HIM ANSWER YOUR QUESTION.

23 MR. DUBUC: ALL RIGHT. I'LL ASK YOU THAT.

24 THE WITNESS: IF I TAKE THE DIMENSION OF 4.02,  
25 AS GIVEN IN MR. EDWARDS'S REPORT, THAT IS AN INFLATED --

1 THAT'S THE TIRE UNDER INFLATION. BUT THERE'S NO EVIDENCE TO  
2 SUGGEST THAT THE TIRE IS INFLATED AS IT SITS ON THE GROUND  
3 AND AS IT SHOWS UP IN THIS PHOTOGRAPH --

4 THE COURT: YOU'RE ANSWERING THE SECOND QUESTION.  
5 ANSWER THE FIRST QUESTION.

6 THE WITNESS: AS TO THE FIRST QUESTION. OKAY.

7 THE COURT: HE ASKED YOU, IF YOU ASSUMED 4.02,  
8 WHAT WOULD BE THE LENGTH OF THE MARK ON THE GROUND.

9 THE WITNESS: I CALCULATE IT TO BE APPROXIMATELY  
10 116 FEET INSTEAD OF 107 OR 110.

11 BY MR. DUBUC:

12 Q SO THE POINT BEING, TAKING THE SMALL DIMENSION OF  
13 OF A KNOWN OR ASSUMED KNOWN OBJECT, YOU MAKE SOME CALCULATIONS  
14 AND YOU PROJECT BY THOSE CALCULATIONS THE MEASUREMENT OF HOW  
15 LONG A TRACK IN THIS CASE; IS THAT CORRECT?

16 A YES. IF WE INCREASE FROM 3.75, WHICH IS THREE  
17 FEET, NINE INCHES, TO 4.02 WE'RE GOING FROM -- WELL, THERE'S  
18 A DIFFERENCE OF THREE INCHES, AND THREE INCHES SPREAD OVER  
19 A HUNDRED FEET ADDS ANOTHER FEW FEET ONTO THE LENGTH OF THAT  
20 TRACK.

21 Q THAT'S A SMALL ADDITION, BUT THE POINT IS, YOU  
22 DON'T MEASURE THE TRACK ITSELF; IS THAT --

23 THE COURT: IS THAT A QUESTION?

24 BY MR. DUBUC:

25 Q IS THAT CORRECT? AM I CORRECT THAT YOU'RE NOT

1 MEASURING THE TRACK ITSELF WITHOUT REFERENCE TO THE ORIGINAL  
2 DIMENSION OF THE TIRE AS A REFERENCE POINT?

3 A THAT IS CORRECT.

4 Q OKAY.

5 A AND SO IN YOUR MEASUREMENTS, TAKING A SMALL ITEM,  
6 YOU USE THAT SMALL ITEM TO GET GREATER DISTANCES, IN THIS  
7 CASE, THE TRACK.

8 A IT COULD WORK THE OTHER WAY AROUND, TOO. YOU  
9 COULD TAKE SOMETHING VERY LARGE AND MEASURE SOMETHING VERY  
10 SMALL.

11 Q BUT IN THIS CASE IT WAS A SMALL ITEM TO GET THE  
12 LARGER TRACK; RIGHT?

13 A THAT IS CORRECT.

14 Q OKAY. NOW, YOU USE SOME OTHER REFERENCES IN YOUR  
15 REPORT AND IN YOUR TESTIMONY. THE NEXT ONE THAT I REMEMBER  
16 YOU MENTIONED WAS THE MEASUREMENT OF A VIETNAMESE -- SOMEBODY  
17 IN THE PICTURE THAT YOU ASSUMED TO BE A VIETNAMESE; IS THAT  
18 CORRECT?

19 A THAT IS CORRECT.

20 Q AND I BELIEVE IN YOUR REPORT, PAGE 15, IN DOING  
21 THAT YOU REFERRED TO A PHOTOGRAPH, WHICH HAS BEEN MARKED, I  
22 BELIEVE, AS PLAINTIFFS' EXHIBIT 1000-126.

23 DO YOU HAVE THAT, DOCTOR?

24 YOU MAY HAVE IT REFERRED TO AS MORAIN FIGURE 1.--  
25 FIGURE 7.

1 A FIGURE 7?

2 Q YES. I BELIEVE THAT'S WHAT YOU SAID IN YOUR REPORT

3 A NO. IT CAN'T BE FIGURE 7.

4 Q ALL RIGHT. I'M SORRY. FIGURE 10.

5 A THAT IS CORRECT.

6 Q MORAIN NUMBER 7.

7 A YES.

8 Q I'M SORRY. OKAY.

9 MR. DUBUC: AND I HAVE THAT.

10 I, WONDER IF WE CAN, WITH YOUR PERMISSION,  
11 YOUR HONOR, PUT IT ON THE SLIDE SO THE JURY CAN SEE IT.

12 THIS IS, AS I UNDERSTAND IT, EXHIBIT 1000-10, OR  
13 MORAIN FIGURE 10.

14 BY MR. DUBUC:

15 Q NOW, DOCTOR, WHICH -- CAN YOU TELL US WHICH  
16 VIETNAMESE PERSON YOU USED FOR YOUR ESTIMATE?

17 A MAY I APPROACH THE SCREEN AND POINT TO IT?

18 Q YES.

19 (THE WITNESS LEAVES THE WITNESS STAND AND  
20 TESTIFIES FROM THE SCREEN.)

21 A THE PERSON IN QUESTION STANDS HERE.

22 Q OKAY. AND IS THAT PERSON WEARING A HAT?

23 A APPEARS TO BE, YES.

24 Q DID YOU INCLUDE THE HAT IN YOUR MEASUREMENT?

25 A YES, I DID.

1 Q IS IT A POINTED HAT?

2 A YES, IT IS.

3 Q CAN YOU SEE THE PERSON'S FEET?

4 A THERE APPEARS TO BE A LITTLE CLUMP OF GRASS RIGHT  
5 AT THE FOOT LEVEL.

6 Q DO YOU KNOW HOW HIGH THE GRASS IS?

7 A WELL, JUDGING FROM THE PERSON STANDING RIGHT NEXT  
8 TO IT, I'D SAY THE GRASS AT THAT POINT IS JUST A FEW INCHES.

9 Q A FEW INCHES? FOUR OR FIVE? WHAT WOULD BE YOUR  
10 ESTIMATE?

11 A I WOULD THINK THREE TO FIVE.

12 Q THREE TO FIVE INCHES.

13 NOW, THE BASIS FOR YOUR INITIAL ASSUMPTION, AS I  
14 UNDERSTAND YOUR REPORT, IS THAT A VIETNAMESE PERSON IS -- YOU  
15 ESTIMATED TO BE 5.33 FEET TALL; IS THAT CORRECT?

16 A FIVE AND ONE-THIRD FEET.

17 Q THAT'S WITHOUT A HAT; ISN'T IT?

18 A NO. I DIDN'T REGARD THE HAT ONE WAY OR THE OTHER.  
19 WHEN I MEASURED THIS INDIVIDUAL WITH THAT DEVICE THAT YOU HAVE  
20 ALREADY SHOWN, I MEASURED FROM WHAT APPEARED UNDER MAGNIFICA-  
21 TION TO BE THE TOP OF THE HAT TO THE POINT DOWN HERE, THAT I  
22 COULD REASONABLY ASSUME WERE THE FEET, AND I JUST TOOK THAT  
23 DIMENSION AND SET IT EQUAL TO 5.33.

24 Q BUT THE BEGINNING POINT IS THAT YOU ESTIMATED THAT  
25 A PERSON, THAT PERSON STANDING THERE, YOUR ESTIMATE FROM YOUR

1 EXPERIENCE -- NOT FROM THE PHOTOGRAPH -- IS THAT THAT PERSON  
2 IS 5.33 FEET; IS THAT CORRECT?

3 A YES.

4 Q ALL RIGHT.

5 THE COURT: DO YOU NEED THE WITNESS AT THE CHART  
6 ANYMORE?

7 MR. DUBUC: NO, I DON'T THINK SO, YOUR HONOR.

8 THE COURT: YOU MAY RETURN TO YOUR SEAT.

9 (WHEREUPON, THE WITNESS RESUMES THE WITNESS STAND.)

10 THE COURT: DO YOU NEED THE PICTURE ANYMORE?

11 MR. DUBUC: NO.

12 YOU CAN TAKE THE PICTURE DOWN, TOO.

13 BY MR. DUBUC:

14 Q HAVE YOU EVER BEEN IN VIETNAM, DOCTOR?

15 A NO; I'VE NEVER BEEN ON THE GROUND IN VIETNAM.

16 Q YOU'VE BEEN IN THAILAND, BUT NOT VIETNAM.

17 A THAT IS CORRECT.

18 Q AND DID YOU MAKE ANY STUDY OR ANY ANALYSIS WHILE  
19 YOU WERE IN THAILAND OF AVERAGE HEIGHTS OF THE THAILANDESE?

20 A NO.

21 Q AND YOU HAVE NEVER MADE ONE OF THE AVERAGE HEIGHT OF  
22 THE VIETNAMESE; IS THAT CORRECT?

23 A THAT'S CORRECT.

24 Q THAT'S JUST AN ASSUMPTION.

25 A THAT'S JUST AN ASSUMPTION.

1 Q NOW, WHAT DID YOU USE THAT HEIGHT FOR, THAT 5.33  
2 FEET?

3 A WELL, AS IT TURNS OUT, THE MEASUREMENTS, BASED ON  
4 THOSE INDIVIDUALS, DIDN'T LEAVE ME ANYPLACE VERY SIGNIFICANT  
5 BECAUSE WHAT I WAS TRYING TO DO WAS MEASURE THE, AS SHOWN ON  
6 FIGURE 10 -- WELL, ON FIGURE 10 IN MY REPORT, NOT ON THE  
7 SLIDES -- I USED IT TO MEASURE THE WIDTH OF ONE OF THOSE  
8 PADDY DIKES, AND MY INTENTION WAS TO TRY TO EVENTUALLY GET TO  
9 THE LENGTH OF THAT POINT OF FIRST TOUCHDOWN ON THE WEST BANK  
10 OF THE RIVER.

11 I USED ANOTHER TECHNIQUE AS WELL, WITH THE ARMY  
12 TOPOGRAPHIC COMMAND MAP, TO EVENTUALLY ARRIVE AT THAT  
13 ULTIMATE MEASUREMENT.

14 Q ALL RIGHT. SO, AS I UNDERSTAND WHAT YOU JUST TOLD  
15 US, YOU DIDN'T REALLY USE THAT HEIGHT OF THE PERSON FOR MUCH  
16 OF ANYTHING; IS THAT WHAT YOU'RE TELLING US -- THAT'S  
17 RELEVANT TO WHAT YOU TESTIFIED TO?

18 A IF YOU LOOK AT MY REPORT -- AND I'M GOING TO HAVE  
19 TO -- I GUESS THIS MOVES, SO I CAN SPREAD OUT A LITTLE BIT.

20 THE COURT: YOU CAN THROW IT BACK UP ON THE BENCH  
21 THERE, DOCTOR.

22 THE WITNESS: THANK YOU.

23 ON PAGE 20, FIGURE 13, THE MEASUREMENTS THAT I  
24 DERIVED BY USE OF THAT ASSUMED HEIGHT OF THE VIETNAMESE  
25 PERSON HAD TO DO WITH THE WIDTH OF THOSE FIELDS, AND THE

1 POINT OF THAT WAS HOPEFULLY TO LEAD ME UP TO THE LENGTH OF  
2 THAT INITIAL TRACK, AND THE MEASUREMENTS FROM THAT -- LET ME  
3 REPHRASE THAT.

4 THE MEASUREMENTS FOR THAT INITIAL TRACK WERE  
5 ACTUALLY TAKEN FROM MORAIN NUMBER 2.

6 NOW I NEED TO FIGURE OUT WHAT FIGURE NUMBER THAT  
7 IS IN THE REPORT.

8 THAT IS FIGURE 15.

9 BY MR. DUBUC:

10 Q THAT'S WALKER 262?

11 A YES, SIR.

12 Q ALL RIGHT.

13 MR. DUBUC: AND I BELIEVE THAT'S GOT A PLAINTIFFS'  
14 NUMBER TO IT, SO WE WANT TO BE SURE.

15 HAVE WE GOT WALKER --

16 MR. CONNERS: 1000-60.

17 BY MR. DUBUC:

18 Q ALL RIGHT. I DIDN'T SEE THAT, DOCTOR, THAT  
19 MORAIN 2, FIGURE 15, IN YOUR EXPLANATION FRIDAY OR TODAY.

20 DID YOU USE IT HERE IN THE COURTROOM?

21 A LET ME CHECK THIS SERIES OF PHOTOGRAPHS.

22 IT IS NOT IN THE -- NO, IT'S NOT IN THIS SERIES  
23 OF BLACK AND WHITE. THERE IS AN ENLARGEMENT OF IT, I BELIEVE.

24 Q 1000-60?

25 A I THOUGHT I SAW ONE HERE LAST FRIDAY.

1 Q ALL RIGHT. IS THIS IT HERE, DOCTOR?

2 A IT'S EITHER THAT ONE OR ONE VERY, VERY SIMILAR  
3 TO IT. IT LOOKS VERY MUCH LIKE THE ONE I HAVE IN MY REPORT.

4 MR. DUBUC: I PROFFER, YOUR HONOR, THIS IS A  
5 SLIDE OF PLAINTIFFS' EXHIBIT 1000-60, WHICH HAS NOT  
6 PREVIOUSLY BEEN OFFERED, BUT APPARENTLY HAS BEEN -- .

7 BY MR. DUBUC:

8 Q THIS WAS USED BY YOU IN PREPARING YOUR REPORT?

9 A YES, SIR.

10 THE COURT: DOES THIS NEED TO BE MARKED IN SOME  
11 SPECIAL WAY?

12 MR. DUBUC: IT IS PRESENTLY MARKED AS PLAINTIFFS'  
13 1000-60.

14 THE COURT: THE SLIDE IS?

15 MR. DUBUC: THE EXHIBIT IS.

16 IS THE SLIDE SO MARKED?

17 MR. CONNERS: THE SLIDE IS SO MARKED.

18 MR. DUBUC: THE SLIDE IS SO MARKED.

19 THE COURT: VERY WELL. GO AHEAD.

20 BY MR. DUBUC:

21 Q NOW, THIS IS, YOU'RE SAYING, THE MAP FOR THE  
22 PICTURE OF THE AREA THAT YOU USED WITH THE VIETNAMESE PERSON?

23 A MIGHT I APPROACH THE SCREEN AGAIN?

24 Q SURE.

25 (WHEREUPON, THE WITNESS LEAVES THE WITNESS STAND

1 AND TESTIFIES FROM THE SCREEN.)

2 A I WAS ATTEMPTING TO GET TWO INDEPENDENT  
3 MEASUREMENTS, THE -- IT MAY TAKE ME A SECOND. PLEASE BEAR  
4 WITH ME.

5 THIS IS GENERALLY THE DIRECTION ALONG WHICH THE  
6 AIRCRAFT WENT. AND IF YOU COULD PRETEND THAT YOU'RE IN A  
7 HELICOPTER AND FLYING AROUND, YOU WOULD EVENTUALLY COME OVER  
8 HERE WHERE YOU WOULD SEE THOSE TWO TRACKS ON THE INITIAL  
9 TOUCHDOWN ON THE WEST BANK OF THE RIVER.

10 THIS IS WEST; THAT IS EAST.

11 I WAS USING THE HEIGHT OF THE VIETNAMESE PERSON  
12 TO GET -- AND AS I SHOW ON FIGURE 13 OF MY REPORT -- TO GET  
13 THESE DIMENSIONS, OF THE NORTH-SOUTH DIMENSIONS ON THOSE  
14 FIELDS.

15 IT DIDN'T PROVE ALL THAT FRUITFUL, SO WHAT I DID  
16 WAS TO THEN GO BACK TO THE ARMY TOPOGRAPHIC COMMAND MAP,  
17 FROM WHICH I CALCULATED THE WIDTH OF THE RIVER ALONG THAT  
18 FLIGHT PATH.

19 AND FROM THAT I COULD THEN MEASURE THIS EAST-WEST  
20 DISTANCE, WHICH IS, AFTER ALL, WHAT I WAS REALLY AFTER. I  
21 WASN'T AFTER THE NORTH-SOUTH DIMENSION.

22 THE HEIGHT OF THE VIETNAMESE PERSONS IN THE FINAL  
23 ANALYSIS TURNED OUT TO BE A SOURCE OF CONFIRMATION TO TELL  
24 ME WHETHER OR NOT MY MEASUREMENTS WERE AT ALL REASONABLE.

25 FOR EXAMPLE, IF USING 5.33 FEET HAD RESULTED IN

1 A NORTH-SOUTH DIMENSION OF SOMETHING, LET'S SAY REALLY WAY OUT,  
2 A THOUSAND FEET, I WOULD HAVE TO SCRATCH MY HEAD AND SAY,  
3 "WAIT A MINUTE. THIS CAN'T BE. THE FIELDS JUST AREN'T THAT  
4 LARGE."

5 SO I USED THOSE NORTH-SOUTH DIMENSIONS TO GIVE ME  
6 SOME BASIS FOR CHECKING MY OWN WORK, SO TO SPEAK.

7 BUT AS FAR AS THIS DISTANCE, THE DISTANCE, THE  
8 LENGTH OF THE TRACK ON THE INITIAL TOUCHDOWN ON THE WEST BANK,  
9 WAS NOT PREDICATED ON THE HEIGHT OF THAT PERSON.

10 Q ALL RIGHT. NOW, YOU MENTIONED -- THIS IS ALSO  
11 EXHIBIT 3-H; IS IT NOT?

12 MR. CONNERS: NO. 3-H IS THE MAP.

13 MR. DUBUC: OKAY.

14 BY MR. DUBUC:

15 Q OKAY. YOU MENTIONED IN THERE, DOCTOR, THAT YOU  
16 USED THE MAP, SO I'M GOING TO ASK YOU ABOUT THE MAP NOW.

17 MR. DUBUC: MAY WE SEE THE MAP?

18 MR. CONNERS: WE DON'T HAVE A SLIDE OF THAT.

19 MR. MC MANUS: YOUR HONOR -- EXCUSE ME -- WE  
20 HAVE A BLOW-UP OF THE MAP.

21 THE COURT: YOU CAN WORK THAT OUT. THIS IS  
22 CROSS EXAMINATION.

23 BY MR. DUBUC:

24 Q THIS IS 3-H. IS THIS THE MAP THAT YOU USED,  
25 EXHIBIT 3-H? I THINK IT'S IN EVIDENCE NOW.

1 A YES. AS I INDICATED, I DIDN'T ACTUALLY USE THIS  
2 PIECE OF PAPER, BUT I DID USE THIS MAP.

3 Q OKAY. AND I THOUGHT I HEARD YOU SAY YOU USED THAT  
4 MAP IN SOME WAY IN PLOTTING DISTANCES, CHECKING DISTANCES?

5 A YES, SIR. USING THE SAME METHODOLOGY, WITH THE  
6 HAND MAGNIFIER -- I KNOW THE SCALE OF THIS MAP IS ONE TO  
7 FIFTY THOUSAND, AND I SIMPLY MEASURED -- I CAN SEE WHERE THE  
8 RIVER IS HERE, AND I MEASURED WITH THAT HAND MAGNIFIER THE  
9 WIDTH OF THE RIVER AT THAT POINT AND SET UP A SIMPLE  
10 PROPORTION SO THAT ONE IS TO FIFTY THOUSAND AS X IS TO SOME  
11 OTHER NUMBER. AND THEN I CAN SCALE THIS PHOTOGRAPH  
12 ACCORDINGLY.

13 Q NOW, IN PREPARING YOUR REPORT ISN'T IT A FACT THAT  
14 AS FAR AS DISTANCES IN PLOTTING FIELD BOUNDARIES AND  
15 DISTANCES ON THE WEST SIDE OF THE RIVER, YOU DID NOT IN FACT  
16 USE THE MAP, EXHIBIT 3-H, BUT RATHER, TWO OTHER REFERENCE  
17 POINTS, SOME MEASUREMENTS ON THE TROOP COMPARTMENT AND SOME  
18 MEASUREMENTS ON THE T-TAIL?

19 A I USED BOTH.

20 Q BUT ISN'T IT A FACT THAT IN PREPARING YOUR REPORT  
21 THE ONLY THING YOU USED THE MAP FOR WAS -- THE PRIMARY PURPOSE  
22 WAS HEADING OF THE AIRCRAFT AND LONGITUDE AND LATITUDE?

23 A NO; THAT'S NOT CORRECT.

24 Q DOCTOR, DO YOU RECALL GIVING A DEPOSITION ON  
25 NOVEMBER 24TH, 1981?

1 A YES, SIR.

2 Q AND DOCTOR, DO YOU RECALL, ON PAGE 39 OF THAT  
3 DEPOSITION, GIVING THESE ANSWERS TO THESE QUESTIONS?

4 LINE 15:

5 "AT PAGE TWO OF YOUR REPORT YOU HAVE INCLUDED A  
6 COPY OF PLAINTIFFS' EXHIBIT 3-H; IS THAT CORRECT?"

7 "YES, SIR."

8 "WHAT DID YOU USE THAT EXHIBIT FOR? ANSWER:  
9 THE PRIMARY PURPOSE WAS TO SHOW THE HEADING OF THE  
10 AIRCRAFT AND FOR ME TO MAKE AN ESTIMATE OF THE  
11 COORDINATES, THE LATITUDE AND THE LONGITUDE."

12 "QUESTION: ANYTHING ELSE? ANSWER: NO, SIR."

13 DO YOU REMEMBER GIVING THOSE ANSWERS TO THOSE  
14 QUESTIONS, DOCTOR?

15 A IT'S ON PAPER, HERE.

16 Q NOW, ISN'T IT A FACT THAT YOU USED MEASUREMENTS  
17 WITH RESPECT TO THE TROOP COMPARTMENT FOR THE LENGTH OF SLIDE  
18 AND THE T-TAIL FOR PURPOSES OF SETTING UP FIELD BOUNDARIES  
19 AND MEASUREMENTS ON THE LENGTH OF TRACKS?

20 A IT IS TRUE THAT I USED THE MEASUREMENTS FROM THIS  
21 PORTION OF THE AIRCRAFT, THE TROOP COMPARTMENT, THIS PORTION  
22 OF THE AIRCRAFT, AND FOR CONFIRMATION OF MEASUREMENTS PRODUCED  
23 FROM THOSE MEASUREMENTS, I ALSO USED THE 3-H. THIS IS ALSO  
24 WRITTEN IN MY REPORT.

25 Q NOW, SIR, YOU MENTIONED ON 3-H THE MEASUREMENTS

1 FROM THE RIVER. DID I JUST HEAR YOU SAY THAT?

2 A YES, SIR.

3 Q IS THAT RIVER TIDAL, TO YOUR KNOWLEDGE?

4 A TOWARD THE MEKONG RIVER, MEKONG DELTA, THERE IS  
5 A TIDAL FLUCTUATION.

6 Q DID YOU MAKE ANY DETERMINATION WHETHER THERE WAS  
7 A TIDAL FLUCTUATION IN THIS AREA WHERE YOU MADE THE MEASUREMENTS?

8 A NO, I DID NOT.

9 Q WHEN WE SAY TIDAL, THAT MEANS THE FLOW COMES IN  
10 AND OUT WITH THE TIDE; IS THAT CORRECT? WE UNDERSTAND EACH  
11 OTHER ON THAT?

12 A YES.

13 Q SO, DEPENDING UPON HOW MUCH WATER COMES IN WHEN  
14 THE TIDE'S IN AND HOW MUCH WATER GOES OUT WHEN THE TIDE'S OUT,  
15 INDICATION OF THE RIVERBANK CHANGES; DOESN'T IT?

16 A NOT NECESSARILY.

17 Q SIR, WITH RESPECT TO THIS ONE, ARE YOU SAYING THAT  
18 THIS RIVERBANK, IF IT'S TIDAL, ASSUMING IT'S TIDAL AT THIS POINT  
19 DID NOT CHANGE?

20 A I DON'T HAVE ANY REASON TO SUPPOSE THAT IT IS  
21 TIDAL AT THIS POINT AND, NUMBER TWO, EVEN IF IT WERE, THE  
22 ONLY DIFFERENCE IT WOULD MAKE HAS TO DO WITH THE SHAPE OF  
23 THE RIVERBANK ITSELF.

24 IF THE BANKS ARE VERY VERTICAL, OR RELATIVELY  
25 VERTICAL, IT WILL MAKE NO DIFFERENCE IN THE WIDTH OF THE

1 RIVER. IT WOULD JUST MAKE A DIFFERENCE AS TO HOW MUCH WATER  
2 IS MOVING UP AND DOWN THAT RIVER.

3 IF, ON THE OTHER HAND, THE BANKS OF THE RIVER ARE  
4 VERY SHALLOW, IT WOULD ONLY TAKE A MATTER OF A FEW -- I  
5 PROBABLY SHOULDN'T USE THE TERM "CUBIC FEET PER SECOND" OR  
6 ANYTHING LIKE THAT IN RELATION TO FLOW. -- BUT IF THE BANKS ARE  
7 SHALLOW, THAT IS, GENTLY SLOPPING, THEN ONE MIGHT ACTUALLY  
8 SEE A CHANGE IN THE WIDTH OF THE RIVER, IF IN FACT IT'S TIDAL.

9 BUT THE EVIDENCE, AS I SEE IT HERE, IS THAT THERE  
10 COULD BE A LOT OF WATER MOVING EITHER WAY IN THIS RIVER, AND  
11 IT'S NOT GOING TO CHANGE THE WIDTH OF IT ANY APPRECIABLE  
12 AMOUNT.

13 Q DOCTOR, I'M GOING TO SHOW YOU WHAT WE MARKED FOR  
14 IDENTIFICATION AS EXHIBIT D1408.

15 IS THAT THE MAP WE WERE TALKING ABOUT, THE MAP  
16 WHICH IS SIMILAR TO 3-H, WITHOUT THE OTHER LINES THAT ARE ON  
17 3-H?

18 A YEAH, I GUESS IT MUST BE.

19 Q DO YOU HAVE ANYTHING ON THAT MAP OR ANYTHING THAT  
20 WAS WITH THE MATERIAL YOU GOT WITH THE MAP THAT INDICATED  
21 WHETHER OR NOT THE MEASUREMENTS SHOWING THE RIVER ON THAT MAP  
22 WERE TO THE RIVERBANK OR THE VEGETATION LINE?

23 A I'M NOT SURE THAT I FOLLOW YOU, SIR.

24 Q WELL, LET'S SEE IF I CAN HELP YOU HERE.

25 DO YOU KNOW IF THE RIVER, AS IT'S INDICATED IN THE

1 EXHIBIT YOU USED, 3-H OR EXHIBIT D1408, WHICH ARE THE SAME,  
2 DO YOU KNOW IF THOSE MEASUREMENTS AS TO THE RIVER ARE TO THE  
3 EDGE OF THE DIKE ON THE RIVER OR TO THE EDGE OF THE  
4 VEGETATION ON THE RIVER?

5 A I THINK IT'S CUSTOMARY IN U. S. MAPPING PRACTICES  
6 TO INCLUDE THE MEAN WATERMARK, THE AVERAGE WATERMARK. SO  
7 WITHOUT ANY OTHER EVIDENCE TO THE CONTRARY I WOULD ASSUME THAT  
8 THE WIDTH OF THE RIVER, AS SHOWN ON THIS MAP, IS THE MEAN  
9 WIDTH OF THE RIVER AT ANY GIVEN TIME.

10 Q BUT THERE IS A DIKE, IS THERE NOT, IN YOUR  
11 DIAGRAM THAT YOU PREPARED FOR YOUR TESTIMONY?

12 A YES. I BELIEVE IT RUNS SOMEWHERE HERE.

13 Q AND THERE ARE SOME MEASUREMENTS INDICATING  
14 DISTANCE FROM THE DIKE; AREN'T THERE?

15 A MEASUREMENTS WHERE?

16 Q IN YOUR DIAGRAM IN YOUR REPORT.

17 A ALL OF MY MEASUREMENTS ARE FROM THE WEST BANK OF  
18 THE RIVER, NOT FROM THE DIKE.

19 Q ALL RIGHT. NOW, WERE YOU ABLE, IN PREPARING  
20 YOUR REPORT, TO MEASURE THE DISTANCE FROM EITHER THE MEAN  
21 WATERMARK OR THE VEGETATION, WHICHEVER WE WANT TO CALL IT,  
22 AND THE DIKE?

23 A I MEASURED THE DISTANCE FROM HERE TO THIS  
24 FEATURE, WHICH IS, FOR WANT OF A BETTER TERM I CALLED IT  
25 "CANAL WALKWAY," WHICH SHOWS UP ON THIS MAP.

1 AND I ALSO MADE A MEASUREMENT, I RECALL, FROM THE  
2 WEST BANK OF THE RIVER TO -- THERE'S ANOTHER CANAL WALKWAY  
3 HERE, THAT'S KIND OF FUZZY.

4 Q BUT IN MAKING THOSE MEASUREMENTS YOU DIDN'T  
5 MEASURE THEM ON HERE. YOU STARTED WITH A KNOWN MEASUREMENT  
6 OF SOMETHING ELSE; DIDN'T YOU?

7 A WHEN YOU SAY THAT YOU SAY I DIDN'T MEASURE THEM  
8 FROM THIS?

9 Q IN OTHER WORDS, YOUR FIRST STEP WAS SIMILAR TO  
10 THE STEP WE HAD WITH THE TIRE. YOU MEASURED SOMETHING ELSE  
11 THAT YOU THOUGHT YOU HAD A KNOWN DIMENSION FOR; IS THAT  
12 CORRECT?

13 A YES.

14 Q AND ONE OF THOSE WAS THE T-TAIL; IS THAT CORRECT?

15 A WE NEED TO CLARIFY THIS. THIS DOCUMENT ALLOWED ME  
16 TO MEASURE FROM THE WEST BANK OF THIS RIVER TO THE DASHED LINE,  
17 WHICH SHOWS TO BE THIS FEATURE, SO I CAN MEASURE -- KNOWING  
18 THE SCALE OF THIS -- I CAN MEASURE THE DISTANCE FROM THE  
19 WEST BANK OF THE RIVER TO THAT CANAL WALKWAY.

20 I CAN ALSO MAKE THAT SAME MEASUREMENT ON THIS  
21 PHOTOGRAPH, USING THE MEASUREMENT THAT I GOT FROM THAT T-TAIL.

22 Q I UNDERSTAND THAT. BUT I THOUGHT I UNDERSTOOD,  
23 AND I READ SOME ANSWERS TO SOME QUESTIONS, WHERE YOU TOLD US  
24 AT YOUR DEPOSITION THAT THE ONLY THING YOU USED THAT MAP FOR  
25 WAS FOR DIRECTION AND LATITUDE AND LONGITUDE.

1                   AND AS I READ YOUR REPORT, I'M READING THAT YOU  
2 USED THAT T-TAIL FOR ONE MEASUREMENT AND USED THE TROOP  
3 COMPARTMENT FOR ANOTHER.

4           A       RIGHT. AND I USED THE MAP FOR CONFIRMATION.

5           Q       ALL RIGHT. NOW, ON CONFIRMATION, THAT'S MY POINT  
6 ON THE MAP.

7                   ON THE MAP, MY QUESTION WAS, WHICH I DON'T THINK  
8 I'VE GOTTEN AN ANSWER FOR YET, BUT MAYBE I DIDN'T STATE IT  
9 VERY WELL.

10                   WHAT I'M TRYING TO FIGURE OUT IS ON YOUR DIAGRAM  
11 DON'T YOU SHOW A DIKE, EXHIBIT 228?

12          A       I SHOW -- LET ME SEE.

13          Q       IS THERE ANYTHING ON THERE THAT'S INDICATING A  
14 DIKE?

15          A       YOU'RE TALKING ABOUT THIS?

16          Q       I THOUGHT I SAW THE WORD "DIKE."

17          A       WELL, YES, THERE'S A -- FOR ARTISTIC PURPOSES  
18 WE PUT A LINE OF VEGETATION IN HERE, AND THERE IS A DIKE  
19 BEHIND THAT. YOU CAN SEE IT.

20          Q       HOW FAR IS THAT DIKE FROM THE MEAN WATERMARK? DID  
21 YOU MEASURE THAT?

22          A       NO, SIR, I DIDN'T MEASURE THAT.

23          Q       YOU COULDN'T DO THAT; COULD YOU?

24          A       I HAD NO REASON TO DO THAT. WHY WOULD I WANT TO  
25 DO IT?

1 Q WELL, YOU COULDN'T DO IT FROM THE MAP, CERTAINLY;  
2 IS THAT CORRECT?

3 A OH, FROM THIS MAP?

4 Q YES.

5 A NO, SIR. I CAN'T DO IT FROM THAT MAP.

6 Q IF YOU CAN'T FIGURE THE DISTANCE FROM THE MEAN  
7 WATERMARK TO THE DIKE BECAUSE OF WHAT WE'VE ALREADY DISCUSSED  
8 HERE TODAY, ARE YOU TELLING US THAT YOU CAN NEVERTHELESS  
9 MEASURE FROM THE MEAN WATERMARK TO SOMETHING ELSE, WITHOUT  
10 KNOWING WHERE THAT WATERMARK IS?

11 A WELL, SIR, THE ONLY THINGS I CAN MEASURE FROM  
12 THIS MAP ARE FEATURES THAT ARE SHOWN ON THIS MAP.

13 THIS LITTLE CANAL IS NOT SHOWN ON THIS MAP,  
14 THEREFORE, I CAN'T MAKE ANY MEASUREMENTS FROM THIS MAP TO  
15 THAT CANAL.

16 BUT THIS FEATURE IS SHOWN ON THIS MAP, THEREFORE,  
17 I CAN SHOW A RELATIVE PROPORTIONAL MEASUREMENT.

18 Q BUT THAT FEATURE, SHOWN ON THIS MAP, AND SHOWN  
19 ON THE MAP YOU'RE USING, IS A RELATIVE DISTANCE, IS IT NOT,  
20 FROM THE MAP YOU'RE USING AS A BASE FROM THE MEAN WATERMARK  
21 OF THE RIVER; ISN'T THAT WHAT WE'RE TALKING ABOUT?

22 A YES. AND THAT WOULD BE, PRESUMABLY, HERE, AND  
23 NOT OVER HERE.

24 Q AND YOU TOLD US YOU CAN'T MEASURE THE DISTANCE  
25 BETWEEN THE WATERMARK AND THE DIKE, WHICH IS ANOTHER THING

1 THAT SHOWS UP ON THAT.

2 A SIR, I'M NOT SURE WHERE YOU'RE GOING WITH THIS,  
3 BECAUSE THIS MAP DOESN'T PURPORT TO SHOW THIS FEATURE. IT  
4 SHOWS THE WEST BANK OF THE RIVER.

5 IT'S A CONFUSION OF THE ISSUES TO BRING THIS  
6 THING IN. IT'S NOT PART OF THE CONSIDERATION.

7 Q OKAY, THEN. ALL RIGHT.

8 NOW, YOU MENTIONED YOU DID USE AS A CONFIRMING  
9 MEASUREMENT, AS I UNDERSTOOD IT, THE MEASUREMENT OF TWO  
10 OTHER THINGS. AND YOU TOLD US THAT ON FRIDAY, THAT YOU HAD  
11 DONE SOME OTHER MEASUREMENTS; IS THAT CORRECT?

12 YOU DID SOME MEASUREMENTS ON THE T-TAIL AND ON  
13 THE TROOP COMPARTMENT.

14 A YES, SIR.

15 Q OKAY. NOW, SIR, CAN YOU COME OVER HERE TO THIS  
16 DIAGRAM? THIS IS ANOTHER EXHIBIT.

17 THE COURT: WILL YOU MOVE THAT SO I CAN SHARE IT?

18 MR. DUBUC: YES, SIR.

19 THE COURT: OKAY.

20 BY MR. DUBUC:

21 Q WE'VE LOOKED AT THIS BEFORE. IT'S EXHIBIT D1216.  
22 I THINK YOU TOLD US IN THE REPORT AND ON TESTIMONY FRIDAY  
23 THAT YOU USED THIS TO TAKE SOME MEASUREMENTS AS TO THE  
24 DISTANCE BETWEEN THE T-TAIL AND PART OF THE TROOP COMPARTMENT;  
25 IS THAT CORRECT?

1 A THAT IS CORRECT.

2 Q AND YOU HAD TO MAKE SOME INTERPOLATIONS, AS I  
3 RECALL.

4 A YES. BASICALLY, AS THAT PIECE OF THE AIRCRAFT  
5 RESTED ON THE GROUND THERE WAS A MARKING -- THERE WAS A  
6 MARKING ON THERE -- IT WAS THE AMERICAN FLAG.

7 AND WHEN YOU ORIENTED THAT FLAG TO ITS PROPER  
8 CONFIGURATION WITH THE AIRCRAFT INTACT IT WAS APPARENT THAT  
9 I WAS LOOKING AT THIS TIP OF THE FUSELAGE AND THIS TIP OF  
10 THE TAIL.

11 SO WHAT I DID WAS TO TRY TO FIGURE OUT WHAT THAT  
12 DISTANCE WAS IF THIS WAS SIXTY-FIVE FEET, ONE INCH. I HAD  
13 TO SUBTRACT OFF LITTLE PIECES AND WHATNOT.

14 Q HOW MUCH DID YOU SUBTRACT OFF?

15 A WELL, IT'S EASIER FOR ME TO TELL YOU WHAT THE  
16 ANSWER WAS, AND BY SUBTRACTION YOU CAN GET THAT.

17 THIS DISTANCE MEASURED, IF I EXTEND THIS OUT ON A  
18 STRAIGHT LINE, THIS DISTANCE TURNED OUT TO BE THIRTY-FOUR AND  
19 A HALF FEET.

20 Q DOCTOR, THE TIP OF THAT T-TAIL TO THE PROJECTED  
21 DISTANCE ON THE TIP OF THE FUSELAGE.

22 A THAT'S CORRECT.

23 Q THERE ARE SOME ANGLES IN THERE; ARE THERE NOT?

24 A YES.

25 Q NOW, HAVING GOTTEN THAT MEASUREMENT, THAT'S THE

1 KNOWN MEASUREMENT, SIMILAR TO THE TIRE.

2 A YES.

3 Q YOU APPLIED THAT MEASUREMENT TO SOMETHING YOU  
4 SAW IN THE PICTURE OF THE T-TAIL AT THE ACCIDENT SCENE; IS  
5 THAT CORRECT?

6 A THAT'S CORRECT.

7 Q TO GET A RELATIVE MEASUREMENT FROM THAT PICTURE  
8 RELATIVE TO THE AREA AND FIELD BOUNDARIES AROUND IT; IS THAT  
9 CORRECT?

10 A YES.

11 Q OKAY. THE NEXT EXHIBIT IS EXHIBIT D1364.

12 MR. CONNERS: PLAINTIFFS' 1000-88.

13 BY MR. DUBUC:

14 Q PLAINTIFFS' EXHIBIT 1000-88. IS THAT THE ONE  
15 THAT YOU USED FOR TAKING THAT DIMENSION AND PUTTING IT ON THE  
16 --

17 A (INTERPOSING) YES. IF IT ISN'T THAT ONE IT'S  
18 ONE SIMILAR TO IT.

19 Q CAN YOU SHOW THE JURY THAT ONE, WHAT YOU WERE  
20 DOING?

21 A WELL, I WAS TRYING TO MEASURE THE DISTANCE FROM  
22 HERE TO HERE -- THOSE TWO POINTS.

23 Q OKAY. AND THEN YOU TOOK THAT DISTANCE AND USED  
24 IT AS A BASE NUMBER FOR MEASURING SOME DISTANCES OF THE  
25 TRACKS; DID YOU NOT?

1 A UM-HUM.

2 Q AND WHICH TRACKS DID YOU USE?

3 A WELL, THERE WERE A NUMBER OF THINGS HERE. FIRST  
4 OF ALL, THIS DISTANCE, AS I HAVE STATED, CAME OUT TO BE  
5 THIRTY-FOUR AND A HALF FEET.

6 I CAN MEASURE, USING THIS SAME MAP THAT WE'VE  
7 ALREADY DISCUSSED, THE DISTANCE FROM THE WEST BANK OF THE RIVER  
8 TO THIS CANAL WALKWAY.

9 Q UM-HUM.

10 A WHEN I DO THAT THE ANSWER I DERIVED IS ELEVEN  
11 HUNDRED AND FIFTY-FIVE FEET, IF MEMORY SERVES ME.

12 THEN I CAN ALSO USE THIS SAME MEASUREMENT, THIS  
13 THIRTY-FOUR AND A HALF FEET, TO MAKE THAT SAME MEASUREMENT  
14 FROM THE WEST BANK OF THE RIVER TO THIS CANAL WALKWAY. WHEN  
15 I DO THAT I COME UP WITH ELEVEN HUNDRED AND FIFTY FEET.

16 SO WHAT THAT TELLS ME IS THAT UTILIZING THIS  
17 DIMENSION GIVES ME AN ANSWER THAT IS FIVE FEET AND ELEVEN  
18 HUNDRED AND FIFTY FEET, WHICH IS A MINISCULE, VANISHINGLY  
19 SMALL, DIFFERENCE.

20 SO BASICALLY WHAT IT SAYS IS THAT'S A REASONABLE  
21 APPROACH AND IF I WANT TO USE THAT MEASUREMENT TO MAKE  
22 ADDITIONAL MEASUREMENTS IN THE SCENE, I HAVE SOME ASSURANCE  
23 THAT THOSE ARE GOING TO GIVE ME, AS LONG AS I STAY BASICALLY  
24 IN THIS PORTION OF THE PHOTOGRAPH -- SO I CAN MEASURE THAT  
25 THIS T-TAIL -- AND I'VE STATED DOWN HERE SOME -- WHAT IT IS? --

1 THIRTEEN HUNDRED AND -- I DON'T SEE IT JUST OFFHAND -- BUT  
2 MEMORY SERVES ME THE T-TAIL WAS RESTING THIRTEEN HUNDRED AND  
3 SOME ODD FEET FROM THE WEST BANK OF THE RIVER.

4 I CAN THEN, BY EXTENSION OF OUR DISCUSSION -- WE'RE  
5 GOING TO GET INTO THE LENGTH OF THIS COMPARTMENT -- AND I CAN  
6 USE EITHER THIS OR I CAN USE THAT TO MEASURE THE LENGTH OF  
7 THOSE TRACKS.

8 Q WHAT DID YOU USE TO MEASURE THE DISTANCE LOCATED  
9 ON HERE FOR THE TROOP COMPARTMENT -- DISTANCE FROM THE TROOP  
10 COMPARTMENT TO THE RIVER?

11 A OH, GOLLY, I'VE GOT TO GO BACK TO MY REPORT.

12 Q SURE. WHY DON'T YOU DO THAT.

13 (WHEREUPON, THE WITNESS RESUMES THE WITNESS STAND.)

14 A YOUR QUESTION AGAIN, SIR?

15 Q YOU'VE TOLD US SOMETHING ABOUT USING THE T-TAIL  
16 MEASUREMENT FROM THE RIVER TO THE PATH AND THEN PROJECTING  
17 THE DISTANCE THE T-TAIL IS FROM THE RIVER.

18 MY QUESTION IS WHAT DID YOU USE THE T-TAIL  
19 DISTANCE THAT YOU USED, THIS MEASUREMENT, WITH REFERENCE TO  
20 THE DISTANCE OF THE TROOP COMPARTMENT FROM THE RIVER?

21 A WHAT DID I USE TO GIVE ME THE DISTANCE OF THE  
22 TROOP COMPARTMENT FROM THE WEST BANK OF THE RIVER?

23 Q RIGHT.

24 A OKAY. (PAUSE) OKAY.

25 Q WHAT PAGE ARE YOU REFERRING TO?

1 A I'M LOOKING AT PAGE 21.

2 MAY I TAKE THIS DOWN TO THE --

3 Q CERTAINLY.

4 THE COURT: YES. GO AHEAD.

5 (WHEREUPON, THE WITNESS LEAVES THE WITNESS STAND  
6 AND TESTIFIES FROM THE SCREEN.)

7 THE WITNESS: SINCE I HAD ALREADY CONFIRMED, BY  
8 BOTH THE MAPS AND ONE OF THESE EARLIER PHOTOGRAPHS, THAT THIS  
9 CANAL WALKWAY WAS ELEVEN HUNDRED FIFTY FEET LESS FIVE FEET  
10 FROM THE WEST BANK OF THE RIVER, I COULD, USING THIS T-TAIL,  
11 AS I SAY, HERE, SINCE THE T-TAIL IS A CERTAIN DISTANCE FROM  
12 THE CANAL WALKWAY, I HAVE -- THE TAIL SECTION IS .85 CENTIMETER  
13 WEST OF THE NORTH-SOUTH TRENDING DRAINAGE CANAL -- THAT'S  
14 THIS -- AND THIS IS EQUIVALENT TO 163 FEET ON THE GROUND, OR  
15 A TOTAL OF ELEVEN HUNDRED FIFTY, PLUS 163, GIVES ME THIRTEEN  
16 HUNDRED AND THIRTEEN FEET FOR THE LOCATION OF THIS PIECE OF  
17 THE AIRCRAFT FROM THE WEST BANK OF THE RIVER, WHICH IS A  
18 NECESSARY MEASUREMENT FOR ME TO MAKE IF I WANT TO PLOT IT ON  
19 THIS MAP.

20 NOW, THE AFT END OF THE TROOP COMPARTMENT WAS  
21 2.95 CENTIMETERS FROM THIS WALKWAY OVER TO HERE, AND THAT'S  
22 EQUIVALENT TO 565 FEET, WHICH, WHEN YOU ADD IT ONTO ELEVEN  
23 HUNDRED FIFTY FEET GIVES YOU A MEASUREMENT OF SOMEWHERE  
24 BETWEEN SEVENTEEN FIFTY AND SEVENTEEN FORTY FEET, AS I HAVE  
25 REPORTED IN MY REPORT.

1 Q SO, AS I UNDERSTAND WHAT YOU JUST TOLD ME, THIS  
2 T-TAIL MEASUREMENT WAS A FACTOR IN GOING THROUGH THIS PROCESS  
3 TO GET THIS FINAL DISTANCE; IS THAT CORRECT?

4 A YES. FOR PURPOSES OF LOCATING THESE PIECES AT  
5 SOME DISTANCE FROM THE WEST BANK OF THE RIVER.

6 Q NOW, AGAIN, DOCTOR, WITH RESPECT TO THE T-TAIL,  
7 DID YOU CONSIDER IN MAKING YOUR MEASUREMENTS ON THIS DIAGRAM,  
8 TO GET THE ORIGINAL MEASUREMENTS YOU TOLD US, DID YOU  
9 CONSIDER THE FACT THAT -- .

10 FIRST OF ALL, DID YOU CONSIDER THE FACT THAT  
11 THE T-TAIL ON THE AIRCRAFT INVOLVED IN THE ACCIDENT TRIM ON  
12 THE ELEVATOR WAS NOT AT A ZERO TRIM?

13 A I WOULDN'T HAVE ANY WAY OF KNOWING THAT.

14 Q WERE YOU TOLD, OR DID YOU CONSIDER, THAT THE  
15 T-TAIL ELEVATOR, WHICH IS AFFECTED BY THAT TRIM, MOVES THE  
16 ENTIRE ELEVATOR, INCLUDING THE POINT FROM WHICH YOU  
17 MEASURED?

18 A WAIT, WAIT, WAIT, WAIT, WAIT.

19 SIR, COULD YOU POINT THE ELEVATOR OUT TO ME?  
20 I DON'T EVEN KNOW WHAT THAT IS.

21 Q ALL RIGHT. I ASSUME YOU DIDN'T CONSIDER THAT.

22 A NO, I DID NOT. BUT I NEED TO KNOW WHERE THE  
23 ELEVATOR IS.

24 THE COURT: YOU DON'T NEED TO KNOW ANYTHING IF  
25 YOU'VE ANSWERED THE QUESTION.

1 BY MR. DUBUC:

2 Q: I WANT YOU TO ASSUME FOR THIS QUESTION THAT THE  
3 T-TAIL ELEVATOR, INCLUDING THE POINT FROM WHICH YOU MEASURED -

4 A UM-HUM.

5 Q -- IS AN OPERATIONAL CONTROL WHICH MOVES UP AND  
6 DOWN, DEPENDING UPON WHAT THE PILOT DOES.

7 A UM-HUM.

8 Q AND CONSIDERING THAT, I WANT YOU ALSO TO ASSUME  
9 THAT IN THIS CASE THERE WAS A MOVEMENT OF THAT IN AN UPWARD  
10 DIRECTION SO THAT THE DISTANCE AS INDICATED IN A NORMAL  
11 POSITION BETWEEN THE TOP OF THE T-TAIL AND THE GROUND WOULD  
12 BE ALTERED AND BE SLIGHTLY GREATER; OKAY?

13 A YES, SIR.

14 Q AND IN CONNECTION WITH THIS QUESTION I WANT YOU  
15 TO ASSUME THAT THE ACTUAL CHANGE IN THAT DIRECTION IS, AS  
16 INDICATED IN EXHIBIT D1407, MR. EDWARDS'S REPORT, WHICH WE  
17 HAVE ALREADY DISCUSSED AND WHICH YOU APPARENTLY LOOKED AT  
18 BEFORE YOU TESTIFIED, THAT THE ACTUAL MEASUREMENT IS  
19 39.92 FEET.

20 THE COURT: INSTEAD OF WHAT?

21 MR. DUBUC: RATHER THAN WHAT HE MEASURED.

22 THE COURT: WHAT IS THE FIGURE?

23 MR. DUBUC: 39.92 FEET.

24 THE COURT: THAT'S YOUR MEASUREMENT?

25 MR. DUBUC: THAT'S MY MEASUREMENT.

1 THE COURT: AND HIS IS WHAT?

2 MR. DUBUC: I BELIEVE IT'S -- .

3 BY MR. DUBUC:

4 Q YOURS IS WHAT, DOCTOR?

5 A MINE IS 34.5 FEET.

6 Q 34.5 -- A DIFFERENCE OF ABOUT FIVE AND A HALF FEET.

7 MAKING THOSE ASSUMPTIONS, IF THE MEASUREMENT  
8 WAS AS INDICATED, BECAUSE OF THE REASONS I'VE JUST STATED,  
9 USING THAT NUMBER INSTEAD OF THE ONE YOU USED, WOULD THE  
10 DISTANCES BETWEEN THE RIVER AND THE T-TAIL AND THE DISTANCES  
11 BETWEEN THE RIVER AND THE TROOP COMPARTMENT BE SLIGHTLY  
12 LONGER THAN YOU'VE INDICATED THEM TO BE?

13 A MAY I GO BACK FOR REFERENCE?

14 Q YES.

15 A THE ANSWER IS BASICALLY YES, THERE WILL BE A  
16 DIFFERENCE.

17 NOW, I SUPPOSE THE QUESTION IS WHAT IS THE  
18 MAGNITUDE OF THAT DIFFERENCE.

19 (PAUSE) I'M NOT SURE THAT I MADE THAT CALCULATION.  
20 IF YOU WANT ME TO MAKE IT I'LL NEED SOME TIME.

21 I CAN STATE, NUMBER ONE, YES, THERE WILL BE A  
22 DIFFERENCE; NUMBER TWO, THE CORRESPONDENCE IN THE TWO  
23 MEASUREMENTS THAT I MADE, ELEVEN HUNDRED FIFTY-FIVE FEET  
24 AND ELEVEN HUNDRED FIFTY FEET, ARE SO CLOSE THAT THERE IS  
25 MORE REASON TO SUSPECT THAT THE NUMBER OF 34 AND A HALF FEET

1 IS A GOOD NUMBER.

2 Q THAT'S A GOOD NUMBER IF THE POSITION OF THE TAIL  
3 TO THE GROUND IN THAT DIAGRAM IS IN A NEUTRAL OR ZERO POSITION.

4 WOULD YOU AGREE WITH ME IF YOU MOVE ONE OF THE  
5 TIPS, OBVIOUSLY, THE MEASUREMENT WOULD BE DIFFERENT?

6 A YES. BUT ITS CORRESPONDENCE TO THE OTHER  
7 INDEPENDENT MEASUREMENT WOULD BE OFF.

8 Q AND IN MAKING THE SELECTION OF THE T-TAIL AND  
9 MAKING THE MEASUREMENTS -- I JUST WANT TO BE SURE -- YOU DID  
10 NOT CONSIDER THE POSITION OF THAT T-TAIL OR THE FACT --

11 THE COURT: ASKED AND ANSWERED FOUR TIMES. WE  
12 DON'T NEED THAT AGAIN.

13 GO ON TO SOMETHING ELSE.

14 BY MR. DUBUC:

15 Q NOW, SIR, YOU ALSO USED THE TROOP COMPARTMENT;  
16 IS THAT CORRECT, SIR?

17 A YES, SIR.

18 Q THE TROOP COMPARTMENT IS HERE?

19 A THAT'S CORRECT.

20 Q AND IS THIS WHAT YOU -- WITHDRAWN.

21 AS I UNDERSTOOD YOUR TESTIMONY FRIDAY YOU STARTED  
22 AGAIN WITH ONE OF THESE DIAGRAMS, AND I THINK YOU STARTED  
23 WITH EXHIBIT DD1217; IS THAT CORRECT?

24 A YES, SIR.

25 Q AND CAN YOU TELL US, AGAIN, WHAT YOU DID ON THAT

1 TO GET THE MEASUREMENT OF THE TROOP COMPARTMENT?

2 (WHEREUPON, THE WITNESS LEAVES THE WITNESS STAND  
3 AND TESTIFIES FROM THE SCREEN.)

4 A IT WAS A PROPORTIONAL MEASUREMENT.

5 ONE CAN GET THE OVERALL LENGTH OF THE AIRCRAFT  
6 FROM MEASUREMENTS PROVIDED ON THE DIAGRAM, AND I SIMPLY  
7 MADE A PROPORTIONAL MEASUREMENT OF THE SO-CALLED  
8 COMPARTMENT E TO THE TOTAL LENGTH OF THE AIRCRAFT, AND THAT  
9 CAME OUT TO BE 65 FEET.

10 Q OKAY. NOW, AS I UNDERSTAND IT -- JUST SO I'M  
11 SURE -- THERE IS NO ACTUAL MEASUREMENT ON THIS DIAGRAM OF  
12 THE TROOP COMPARTMENT, AS SUCH.

13 A I WAS NOT ABLE TO FIND ONE.

14 Q THERE ARE LINES INDICATING THE BACK WALL AND THE  
15 FRONT WALL OF THE TROOP COMPARTMENT; IS THAT CORRECT?

16 A I DON'T KNOW WHAT THOSE LINES ARE.

17 Q BUT THAT'S WHAT YOU ASSUMED THEM TO BE.

18 A WELL, PRECISELY, I DON'T KNOW WHAT THEY ARE,  
19 BUT THEY'RE LINES THAT -- .

20 Q MY QUESTION IS, ARE THOSE THE LINES YOU USED FOR  
21 THE FORWARD END AND THE BACK END OF THE TROOP COMPARTMENT --

22 A THAT'S CORRECT.

23 Q -- WHEN YOU MADE YOUR MEASUREMENT OF 65 FEET?

24 A THAT IS CORRECT.

25 Q OKAY. NOW, DID YOU USE THAT 65 FOOT MEASUREMENT

1 THEN TO MEASURE SOMETHING IN A PICTURE AS THE BASIS FOR  
2 ANOTHER CALCULATION?

3 A YES, I DID.

4 Q IS THIS THE PICTURE YOU USED FOR MEASUREMENT?  
5 THIS IS EXHIBIT -- SAME EXHIBIT AS WE HAD BEFORE, 1000-60.

6 MR. CONNERS: NO. 1000-88.

7 MR. DUBUC: OKAY, 1000-88.

8 THE WITNESS: IS THAT THE PICTURE THAT I USED  
9 FOR -- ?

10 MR. DUBUC: TO TAKE THE 65 FEET, APPLY IT TO  
11 THIS, AND THEN AGAIN GET FIELD BOUNDARIES AND MAKE SOME  
12 MEASUREMENTS FROM IT.

13 THE WITNESS: THAT'S CORRECT.

14 BY MR. DUBUC:

15 Q OKAY. AND I BELIEVE YOU USED THAT TO MEASURE  
16 THE LENGTH OF SOME FINAL TRACKS OF THE TROOP COMPARTMENT;  
17 IS THAT CORRECT?

18 A THAT IS ALSO CORRECT.

19 Q NOW, DID YOU CHECK THAT MEASUREMENT OF 65 FEET  
20 RELATIVE TO ANYTHING IN THIS PICTURE OR ANY OTHER PICTURE  
21 TO DETERMINE WHETHER WHAT WE'RE SEEING IN THIS PICTURE AND THAT  
22 YOU USED FOR MEASUREMENT IS THE TROOP COMPARTMENT FRONT  
23 AND AFT WALL, OR MORE THAN THAT?

24 A I TOOK THE FEATURE AS SHOWN ON THE PHOTOGRAPH  
25 AND ASSUMED THAT THAT WAS 65 FEET LONG.

1 Q ALL RIGHT, SIR. AND IN PREPARING YOUR REPORT  
2 YOU HAD SOME OTHER PICTURES THAT YOU LOOKED AT; DID YOU NOT?

3 A THAT IS CORRECT.

4 MR. DUBUC: WHICH ONE IS THIS, MR. CONNERS?

5 MR. CONNERS: DEFENDANTS' 1381.

6 MR. DUBUC: OKAY.

7 BY MR. DUBUC:

8 Q IS THIS ONE OF THE ONES YOU LOOKED AT?

9 A I PROBABLY LOOKED AT IT, BUT NOT FOR THE  
10 PURPOSES OF OUR CURRENT DISCUSSION.

11 Q I UNDERSTAND THAT, SIR. BUT FOR PURPOSES OF WHAT  
12 I'D LIKE TO ASK YOU ABOUT, I'D LIKE TO USE THIS ONE.

13 REFERRING TO THIS EXHIBIT YOU NOTE THE  
14 DISTANCE BETWEEN THE TWO EXIT DOORS, THIS ONE HERE, AND  
15 THIS ONE HERE?

16 A UM-HUM. YES.

17 Q AND YOU NOTE THE DISTANCE BETWEEN THE AFT EXIT  
18 DOOR IN THE BACK OF THE PICTURE, AS IT DEPICTS THE TROOP  
19 COMPARTMENT?

20 A I SEE THAT.

21 Q AND WOULD YOU SAY, SIR, AS AN EXPERT IN  
22 ANALYZING PHOTOGRAPHS THAT THE DISTANCE BETWEEN THE DOOR  
23 AND THE BACK, AS DEPICTED, IS GREATER THAN THE DISTANCE  
24 BETWEEN THE TWO EXITS?

25 A YES, I WOULD SAY THAT.

1 Q NOW, SIR, LOOKING AT THE DIAGRAM THAT YOU USED TO  
2 MAKE THE MEASUREMENTS, EXHIBIT D1217, WOULD YOU LOOK AND TELL  
3 ME WHETHER IN FACT THE DISTANCE BETWEEN THE TWO EXIT DOORS,  
4 AS DEPICTED, IS GREATER THAN THE DISTANCE TO THE END OF  
5 THE TROOP COMPARTMENT?

6 A IT'S OBVIOUS THAT THESE TWO DOORS ARE FARTHER APART  
7 THAN THE DISTANCE BETWEEN THE AFT DOOR TO THE TERMINUS OF  
8 THAT OBJECT.

9 Q SO IF WE, MAKING THIS ANALYSIS, LOOKING AT THE  
10 INITIAL DIAGRAM, WHERE YOU MADE THE MEASUREMENT, AND COMPARED  
11 IT TO THIS EXHIBIT, AS IT DEPICTS THAT PORTION OF THE  
12 AIRCRAFT, INCLUDING THE TROOP COMPARTMENT, IT WOULD  
13 INDICATE THAT ON THAT PICTURE THERE APPEARS TO BE MORE  
14 STRUCTURE BEYOND THE AFT LINE THAT YOU SAW ON 1217 AND  
15 FROM WHICH YOU MADE YOUR MEASUREMENT; WOULD YOU AGREE WITH  
16 THAT, SIR?

17 A NO, SIR.

18 Q YOU WOULD NOT. YOU WOULD NOT AGREE THAT IF THIS  
19 IS LONGER THAN THE AREA DEPICTED ON THE FIGURE THAT THE  
20 DISTANCE MUST INCLUDE MORE THAN THE 65 FEET?

21 A NOT NECESSARILY. AGAIN, NOT -- I DON'T KNOW  
22 ANYTHING ABOUT THE C5-A STRUCTURALLY, BUT AS A PHOTO  
23 INTERPRETER IT LOOKS TO ME LIKE SOMETHING HAS HAPPENED  
24 IN HERE AND YOU MAY HAVE HAD SOME KIND OF COMPRESSION.  
25 LOOKS LIKE A SHADOW LINE OR SOMETHING IN THERE.

1 I'M NOT SAYING IT EXISTS.

2 Q YOU MEAN A SHADOW FROM THE SUN?

3 A WELL, YES.

4 Q YOU DEPICT THAT AS SHADE AREA?

5 A ALL I'M SAYING, SIR, IS THERE MAY HAVE BEEN --  
6 WHAT YOU SEE IN THIS PHOTOGRAPH MAY NOT BE THE ENTIRE FACTS  
7 OF THE MATTER BECAUSE THERE MAY HAVE BEEN SOME COMPRESSION  
8 IN HERE, SUCH THAT WHAT ON THAT DIAGRAM WOULD APPEAR TO BE  
9 FARTHER APART IS NOW CLOSER TOGETHER.

10 Q DO YOU HAVE ANY INFORMATION INDICATING THERE  
11 WAS ANY SUCH COMPRESSION OF DISTANCE TO THAT EXTENT?

12 A PURELY AS A PHOTO INTERPRETER. I'M SUGGESTING  
13 A POSSIBILITY.

14 Q ALL RIGHT, SIR.

15 I WANT YOU TO ASSUME FOR THIS QUESTION THAT  
16 THERE WAS NO SIGNIFICANT CHANGE AS A RESULT OF THIS ACCIDENT  
17 OF THE DISTANCE BETWEEN THOSE TWO EXIT DOORS.

18 A IF I ASSUME THAT THERE'S NO SIGNIFICANT CHANGE,  
19 THEN YOUR COMMENT WITH REGARD TO THAT DIAGRAM IS CORRECT.

20 Q THE COMMENT BEING THAT IN FACT THERE WOULD BE  
21 MORE THAN 65 FEET; THERE WOULD BE SOME ADDITIONAL DISTANCE  
22 BEYOND THE BACK WALL, AS DEPICTED HERE, BECAUSE OF THE  
23 DISTANCE, GREATER DISTANCE, HERE THAN SHOWN ON THE  
24 DIAGRAM; IS THAT CORRECT?

25 A YOU USE THE WORD, "IN FACT." WE'VE GONE FROM

1 A HYPOTHETICAL SITUATION TO A FACT, AND I'M NOT PREPARED TO  
2 MAKE THAT JUMP.

3 Q NO. MAKING THAT ASSUMPTION, WE WOULD HAVE A  
4 GREATER DISTANCE; WOULD WE NOT?

5 A MAKING THE ASSUMPTION THAT THERE HAS BEEN NO  
6 ALTERATION?

7 Q THAT'S CORRECT.

8 A THEN THE DIAGRAM SHOWS A GREATER DISTANCE BETWEEN  
9 THE TWO HOLDS THAN BETWEEN THE AFT DOOR, THAT IS CORRECT.

10 Q RIGHT.

11 THE COURT: DOES THAT COMPLETE THAT LINE OF  
12 QUESTIONING?

13 MR. DUBUC: ONE MORE QUESTION, YOUR HONOR.

14 BY MR. DUBUC:

15 Q HAVING NOTED WHAT YOU JUST NOTED THIS MORNING,  
16 HAD YOU NOTICED THIS BEFORE, THESE DIFFERENT DISTANCES BETWEEN  
17 THE DOORS?

18 A NO.

19 Q YOU HADN'T NOTICED THAT.

20 A NO.

21 Q SO YOU HAVEN'T ASKED ANYBODY WHETHER OR NOT  
22 THERE WAS ANY CHANGE IN THAT STRUCTURE, AS MEASURED, VERSUS  
23 WHAT WE SEE HERE; IS THAT CORRECT?

24 A THAT'S CORRECT.

25 Q OKAY. NOW, SIR, YOU HAD RECEIVED -- HAVE

1 LOOKED AT MR. EDWARDS'S CALCULATIONS BEFORE YOU TESTIFIED  
2 FRIDAY, SO YOU HADN'T CONSIDERED THOSE NUMBERS EITHER; IS  
3 THAT CORRECT?

4 A THAT IS CORRECT. I HAD NOT.

5 Q NOW, ASSUMING THE DISTANCE OF THE TROOP  
6 COMPARTMENT, INCLUDING THE TROOP COMPARTMENT AND WHATEVER  
7 IS LEFT BEYOND THERE, IS 75 FEET INSTEAD OF 65 FEET, THAT  
8 WOULD AGAIN CHANGE YOUR CALCULATIONS AND INCREASE  
9 DISTANCES INDICATED ON THE EXHIBITS; IS THAT CORRECT?

10 A AS A MATTER OF FACT, I HAVE MADE THOSE  
11 CALCULATIONS.

12 Q OKAY.

13 A IF I MIGHT, I WOULD LIKE TO SUGGEST WHAT HAPPENS  
14 TO MY CALCULATIONS WHEN YOU USE THAT ASSUMPTION.

15 Q ALL RIGHT, SIR. I'M GOING TO ASK YOU THAT.

16 MR. DUBUC: THERE'S TWO OTHER SLIDES THAT I  
17 WANT TO SHOW ON THIS PARTICULAR POINT.

18 THE COURT: WE'RE GOING TO HAVE TO ADJOURN NOW,  
19 MR. DUBUC.

20 MR. DUBUC: ALL RIGHT, YOUR HONOR.

21 THE COURT: WE'LL RECONVENE AT TWO, P. M.,  
22 LADIES AND GENTLEMEN.

23 (WHEREUPON, THE JURY RETIRES FOR A LUNCHEON  
24 RECESS.)

25 MR. DUBUC: YOUR HONOR, IS THE USUAL RULE ON

1 WITNESSES ON CROSS IN EFFECT?

2 THE COURT: YES.

3 MR. DUBUC: THIS WITNESS KNOWS ABOUT IT. OR  
4 COUNSEL KNOW ABOUT IT.

5 THE COURT: OKAY.

6 MR. MC MANUS: YOUR HONOR, I'D LIKE TO ON THE  
7 RECORD ASK MR. DUBUC, ARE THERE ARE GOING TO BE ANY  
8 OTHER NEW EXHIBITS THAT ARE GOING TO BE USED DURING THE  
9 CROSS EXAMINATION?

10 MR. CONNERS: SOME MORE FROM THE MOTION PICTURES.

11 MR. DUBUC: THERE ARE SOME MORE OF THESE SAME  
12 THINGS THAT WE USED WITH MR. CARROLL. THAT KIND OF THING IS  
13 THE SAME KIND OF THING WE'RE GOING TO USE.

14 MR. LEWIS: COULD WE HAVE AN ESTIMATE ON TIME?

15 MR. DUBUC: I HOPE ABOUT FORTY-FIVE MINUTES.

16 (WHEREUPON, AT 12:18, P. M., A LUNCHEON RECESS  
17 WAS TAKEN.)

BA-mt  
1-1

1 THE COURT: Bring the jury in.

2 (Whereupon, the jury entered the courtroom.)

3 MR. DUBUC: Thank you, Your Honor.

4 CROSS-EXAMINATION (Cont'd)

5 BY MR. DUBUC:

6 Q Doctor, this is the point of departure so we can  
7 get ourselves back into context, and I think the last slide  
8 we were talking about this morning was the one of the troop  
9 compartment on the ground, which I'm going to have Mr.  
10 Connors -- if it's all right with the Court, can I have  
11 Mr. Connors announce the numbers?

12 THE COURT: Yes.

13 MR. CONNORS: Defendants' Exhibit D-1381.

14 BY MR. DUBUC:

15 Q We had looked at that.

16 Before we leave that, Doctor, I just want to ask  
17 you something: there is some blue showing in here?

18 A Yes, sir.

19 Q When you looked at these pictures and during  
20 your analysis, would that blue coloring conform to water?

21 A Yes, sir.

22 Q All right.

23 Now, when we also commented on this picture this  
24 morning we talked about the distance between that aft door  
25 and the rear as represented. Do you remember that?

1 A Yes, sir.

2 Q Okay.

3 Let's have the next slide, please.

4 MR. CONNORS: The next slide is D-1388 or  
5 Plaintiffs' 1000-44.

6 BY MR. DUBUC:

7 Q That is a picture you had also looked at, had  
8 you not, Doctor?

9 A Yes, I have seen that picture.

10 Q And looking at that picture -- when you first  
11 looked at it, did you note the position of the wall as it  
12 appears and did you note any of the ribbing on the sides?

13 A I'm aware of it. Beyond that, I didn't take  
14 any particular note.

15 Q Okay.

16 Can we have the next one?

17 MR. CONNORS: Defendants D-1389.

18 BY MR. DUBUC:

19 Q This is a closer up of the same picture. That's  
20 also one -- I know you looked at lots of them, but that is  
21 one of the many you looked at, is it not?

22 A Yes, sir.

23 Q And the ribbing appears in there a little clearer,  
24 does it not?

25 A Yes, sir.

1 Q Did you notice the ribbing when you looked at  
2 that picture in making your analysis?

3 A I noticed it, yes.

4 Q Now, did you by any chance count the number of  
5 ribs that appears here and back away from the wall?

6 A No, I did not.

7 Q In making your analysis, that did not suggest to  
8 you, Doctor, or did that suggest to you that there was  
9 additional structure behind that wall as represented on  
10 the picture?

11 A Frankly, I'm not into the design of the aircraft  
12 enough to know what it would suggest to me.

13 Q No, I'm not asking you about the design of the  
14 airplane. I'm only talking about the issue that we discussed  
15 a little bit before we broke this morning, the issue of  
16 whether you noticed or had any way to notice the additional  
17 structure beyond the length of the troop compartment wall  
18 to wall, and my question is: wouldn't this picture suggest  
19 that?

20 A That pictures suggests to me that there is  
21 structure aft of that wall, yes.

22 Q So, shouldn't you or couldn't you if you had  
23 looked and made that observation, have a basis for checking  
24 further into that dimension?

25 A No, sir, not on the basis of the documents I had

1 available to me.

2 Q How about on the basis of that picture?

3 A Well, I don't know the design of the aircraft  
4 well enough to know what to do with that information.

5 Q All right.

6 Q Next.

7 MR. CONNORS: Plaintiffs' Exhibit 248, his  
8 records diagram.

9 BY MR. DUBUC:

10 Q Doctor, we have talked about several items that  
11 you used; the tire, the troop compartment, the key tail  
12 measurement, the Vietnamese person, and the maps. Is that  
13 correct?

14 A That is correct.

15 Q And based on your testimony, would you agree that  
16 certain measurements on the east side based on the tire  
17 might be slightly longer than you have them depicted in  
18 here, if you used the tire as 4.02 feet instead of 3.75  
19 feet?

20 A Yes, sir. I have already testified that the  
21 measurement would go from approximately 107 feet or  
22 thereabouts to approximately 116 feet.

23 Q All right.

24 And, sir, if we used, for example, the T-tail  
25 computation, the T-tail computation we went through this

1 morning, using the figure 39 feet instead of the 34 feet  
2 that you used, would some of the measurements of tracks  
3 on the other side of the river be slightly different as  
4 they are depicted on here?

5 A Again, as I have testified, I have not calculated  
6 that, but I would anticipate the numbers would be slightly  
7 longer.

8 Q Slightly longer.

9 And using the troop compartment measurement,  
10 75 feet -- assuming that's correct as indicated in the  
11 Edwards' memorandum -- assume for the purpose of the  
12 question it's correct, in that measurement -- using that  
13 measurement, would you agree that the tracks relative to  
14 the troop compartment also would be slightly longer?

15 MR. MC MANUS: I have an objection.

16 THE COURT: Overruled.

17 MR. MC MANUS: May we approach the bench?

18 THE COURT: Yes.

19 (AT THE BENCH.)

20 MR. MC MANUS: Your Honor, in his depositions Mr.  
21 Edwards has previously testified that he took no onsite  
22 measurements. And when he was deposed most recently on the  
23 39 B6 discovery matters, he testified that he at that time  
24 did not have any idea what the differences were between the  
25 ribs of the airplane, and things of that nature.

1 Now, counsel keeps bringing up the fact of Mr.  
2 Edwards' letter as if it is a fact when, one, it is not in  
3 evidence, and he has previously testified ---

4 THE COURT: He is asking a hypothetical question,  
5 counsel. He can ask that. If he doesn't establish the  
6 predicate ---

7 MR. LEWIS: The problem, sir, is this: After we  
8 got the pictures we had an opportunity to take Mr. Edwards'  
9 30(b)6 -- or we took the corporation, 30(b)6, and Edwards  
10 was produced.

11 I asked him every question I could think of about  
12 the dimensions, the type of material, what everything was  
13 made of, and so forth.

14 The gist of it is he didn't know the answer to  
15 anything, Judge.

16 THE COURT: He didn't know it that afternoon,  
17 you mean?

18 MR. LEWIS: He didn't know it that afternoon, sir.

19 THE COURT: But he since became informed.

20 MR. LEWIS: The problem is, Your Honor, relying  
21 on the data that we have -- I mean, we are in a situation,  
22 Your Honor, where we didn't make the airplane.

23 They had an opportunity to be on the ground, and  
24 he didn't measure anything, didn't measure the skidmarks --  
25 didn't do any of the things that we are trying to demonstrate

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1 now, and they have an opportunity to sandbag us by asking  
2 what the materials are, how big they are and that sort of  
3 thing, Judge, as to the corporation, and now after we take  
4 what data we have and try to use it in a professional way,  
5 and they come back and say, oh, Edwards now knows ---

6 THE COURT: Just a moment. Let him finish.

7 MR. LEWIS: It seems to me, Your Honor, that at  
8 the very least, there ought to be some kind of estoppel  
9 arising when we take a 30(b)6, they produce the structural  
10 engineer, we ask him -- it wasn't 30(b)6 -- ask him all  
11 sorts of materials, as to what this airplane was made of  
12 and how big it was, and the various things like that, and  
13 he didn't know dimensions or anything of that kind.

14 At some juncture, Your Honor, it seems to me,  
15 particularly in the instance of the 30(b)6 and because of  
16 the photographs and the circumstances where they were on  
17 the ground and saw all of this material before, and now we  
18 are being caught in -- at least they are trying to put us  
19 in an invidious situation which, it seems to me, is  
20 objectionable.

21 THE COURT: What is your objection?

22 MR. LEWIS: My objection is, Your Honor -- or our  
23 objection is that there should be an estoppel from Lockheed.

24 THE COURT: There is a question outstanding,  
25 and do you have any objection to it, are you asking for an

1 instruction -- what are you asking for?

2 MR. MC MANUS: Yes, sir. They are relying more  
3 and more on Dr. Morain's cross-examination on these factual --  
4 as they say -- representations of Mr. Edwards.

5 THE COURT: You will have a shot at Edwards.

6 MR. LEWIS: We say they should not be allowed to  
7 show it.

8 THE COURT: Objection is overruled.

9 (IN OPEN COURT.)

10 BY MR. DUBUC:

11 Q Doctor, I have asked you this question and I'll  
12 do it again rather than have him read it back.

13 Making the assumption that the troop compartment  
14 segment with the additional area we just looked at in the  
15 picture is 75 feet long, as opposed to the measurement you  
16 made, and if you apply that 75 feet to the tracks on the  
17 troop compartment, as I think you did with the 65 feet,  
18 would you agree that, assuming that fact, the 75 feet to  
19 be accurate, that the tracks depicted for the troop  
20 compartment slide, the distance of the slide, would be longer?

21 A Yes, sir.

22 I have calculated that the number presented on  
23 the diagram of 260 feet would be increased to approximately  
24 300 feet.

25 Q All right.

1 Now, I just want to ask you one other question on  
2 that: in fact, your measurements are from the river to the  
3 troop compartment. Is that correct?

4 In other words, are we depicting on here distance  
5 from the river to the rear edge of the troop compartment?

6 A No, sir. The measurement we are discussing, I  
7 thought, was the length of those tracks.

8 Q Okay.

9 I'm asking another question, and I do apologize.

10 As I understand, your measurements, let's say  
11 with respect to the troop compartment or with respect to the  
12 location of the T-tail in your report, do I understand that  
13 the measurements are from the river to the back end of the  
14 troop compartment, if we will add up what you depicted on  
15 the chart?

16 A Yes. I do have a measurement on that diagram --  
17 I can't quite see it from where -- I think the number I  
18 gave is 1,715 feet from the west bank of the river to the  
19 aft end of that troop compartment.

20 Q If we assume the troop compartment is 65 feet,  
21 the way you originally computed it, it would be an  
22 additional 65 feet or 1,775 feet to the front of the troop  
23 compartment.

24 Would that be right?

25 A (No response.)

1 Q You measured to the rear, so anybody sitting in  
2 the front would be 65 feet further away from the river.  
3 That's my question.

4 Is that correct?

5 A Anybody sitting in the rear would still only be  
6 1,715 feet from the river.

7 Q Anybody sitting in the front ---

8 A Any point along that distance moves. I'm not a  
9 physicist, but I think you get into theories of relativity  
10 at this point.

11 Things are moving as a unit.

12 Q Absolutely. Agreed, Doctor.

13 But the point is the troop compartment is either  
14 65 feet, as you said, or 75 feet, that segment, long.

15 Isn't that true?

16 A Well, the nose end of it obviously ---

17 Q It will be that much further?

18 A Yes.

19 (A pause.)

20 MR. DUBUC: The next exhibit, Your Honor, we  
21 would like to show him is ---

22 MR. CONNORS: D-1400.

23 MR. DUBUC: Yes.

24 BY MR. DUBUC:

25 Q Now, Doctor, on the subject of the tracks -- now

1 we are shifting to the subject of the tracks -- I think you  
2 mentioned these are tracks that you indicated were, in your  
3 opinion, were disturbances of some kind made by part of the  
4 airplane?

5 A Yes.

6 Q And they are water filled?

7 A Yes.

8 Q I don't recall whether I heard you, but how deep  
9 were they?

10 A It's impossible to calculate the depth of those  
11 because there's obviously water standing in them, and we  
12 don't know how deep they may be below the surface of that  
13 water?

14 Q Did you form any opinion as to whether they  
15 were the same depth, deeper or shallower, than those tracks  
16 we were looking at just a minute ago behind the troop  
17 compartment?

18 A I have not -- I have an opinion on it, but I  
19 haven't discussed it anywhere.

20 Q Well, what is your opinion?

21 A My opinions is that those tracks appear to be  
22 deeper than the ones trailing eastward of the troop compartment

23 Q In other words, whatever went in here went in  
24 deeper?

25 A It appears that way to me. Yes, sir.

1 Q In your opinion, based on your knowledge, is  
2 there any difference between the water table, or the softness  
3 of the ground and the level of water here as it is behind  
4 the troop compartment?

5 A The water table, as you put it, is, since water  
6 seeks its own level, is probably the same.

7 Q The same. Okay.

8 Now, as long as we are here, we were talking  
9 about the dike. Is this the dike that appears on your  
10 exhibit?

11 A I assume so, yes.

12 Q Is this the edge of the river?

13 A Yes.

14 Q And this is what? Did you make any analysis of  
15 whether this is foliage or whether this was rises or what?

16 A Well, that's riverbank vegetation.

17 Q But not an elevation, just vegetation?

18 A Well, there is an elevation there; I don't know  
19 exactly how much.

20 Q Is there an elevation of vegetation, or is it  
21 an elevation or the riverbank itself?

22 A May I approach the screen?

23 Q Sure.

24 A I have been asked to utilize this.

25 (Indicating the roving microphone.)

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1 Q Fine.

2 A There is a difference in elevation between the  
3 river level and this level, as indicated right here, but  
4 basically we are looking at a line of vegetation along the  
5 river.

6 Q Well, I'm wondering -- we do have a different  
7 vegetation line, don't we?

8 A A different vegetation line from what?

9 Q This is a line of vegetation, as you just said.

10 A Oh, yes.

11 Q And the heights of the vegetation appear different  
12 as you go along, it's an uneven line.

13 Is that correct?

14 A That's correct.

15 Q Now, are you able to tell, looking at this  
16 picture, sir, whether or not, for example, in this area  
17 here whether the ground elevation is the same as it is  
18 over here, just by looking at the picture?

19 A May I repeat that question, since I couldn't, I  
20 wasn't able to see all of what you said immediately.

21 You're asking is this area here any different ---

22 Q You have some vegetation there, is my question.

23 A Yes.

24 Q Looking at the vegetation, can you tell just  
25 looking at that vegetation whether or not the ground underneath

1 it, in fact, is elevated to a different height than the  
2 flat ground we see, or the same?

3 A I cannot really tell from this picture alone.

4 Q Okay.

5 I think we have another one.

6 MR. CONNORS: D-1401.

7 BY MR. DUBUC:

8 Q D-1401.

9 I'm having trouble staying in the right place  
10 here, and I'm sorry.

11 That is another view going down the line of  
12 disturbance, is it not, and you looked at those, did you  
13 not?

14 A Yes, sir.

15 Q Now, I thought I heard you tell us this morning,  
16 am I correct, that in your opinion that is soft ground, wet,  
17 muddy?

18 A Yes, sir.

19 Q And there are some different shaped gouges in  
20 that area?

21 A Yes, sir.

22 Q And are those, in your opinion, deeper than  
23 let's say the gouges we see behind the troop compartment?

24 A They appear to be deeper to me.

25 Q All right.

1 And those, I thought I heard you say this  
2 morning, that, in your opinion, those disturbances at some  
3 point are interrupted.

4 Is that correct?

5 A That is correct.

6 Q Where are they interrupted, in your opinion?

7 A In my opinion, this water-filled track terminates  
8 roughly about here, and in the subsequent pictures that we  
9 have already seen, they begin again back in here.

10 These lineations might at first appear to be  
11 tracks, but they are parallel to this main drainage canal,  
12 and for that reason are suspect as to whether -- my opinion  
13 is they were not formed by any part of this aircraft, but  
14 rather are manmade structures in that field, a parallel  
15 drainage canal.

16 MR. DUBUC: May I have the next slide, please?

17 MR. CONNORS: D-1402.

18 BY MR. DUBUC:

19 Q That is towards the end of those disturbances  
20 we were just looking at?

21 A Yes. And here are the tracks or the lineations  
22 that appear to be, more or less, parallel to this canal ---

23 Q Okay.

24 A --- or waterway.

25 Q Now, that is still pretty soft ground there?

1 A Yes, I would say so.

2 Q All right.

3 And is it your opinion that that consistency  
4 of ground continues up to where the tracks for the troop  
5 compartment were seen in the other picture?

6 A For clarification, you're asking if this region  
7 in here has the same consistency as this area and the area  
8 right aft of the troop compartment?

9 Q Yes.

10 A On the basis of the evidence in that picture, I  
11 would say that it is less, there's much less evidence of  
12 water in here with the exception of this area.

13 There are a few spots of water, but nothing  
14 to match this.

15 Q Based on what you told us and your knowledge,  
16 that the problem being drainage rather than irrigation in  
17 this area, did you consider, in forming your opinion,  
18 whether or not these fields between these tracks and the  
19 other tracks might have been drained?

20 A There are some cultivation practices that appear  
21 to be in operation here, such that these lineations are  
22 deep enough to have accumulated with some water.

23 These fields don't appear to have those same  
24 cultivation practices.

25 Q I'm not sure I understand your answer. Does that

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1 mean in your opinion maybe they are not using them for  
2 the same purposes of cultivation?

3 A That's possible, yes.

4 Q So they may not be as wet?

5 A Well, the subsoil would be.

6 Q Okay.

7 The next slide.

8 MR. CONNORS: D-1403.

9 BY MR. DUBUC:

10 Q That is toward the end of the same disturbances?

11 A Yes. I have never seen this picture.

12 Q All right.

13 Does that have anything to do -- why don't you  
14 take a look at it.

15 (A pause.)

16 Does it have anything in it that would affect  
17 your opinion in any way?

18 A No, sir.

19 Q Okay.

20 The next one, please.

21 MR. CONNORS: D-1404.

22 BY MR. DUBUC:

23 Q That's another one towards this end, and it shows  
24 the area that we were just talking about, which appears  
25 near the end of those trackmarks, some here in the lower

1 right-hand corner.

2 Do you see those disturbance marks?

3 A Are you referring to this, perhaps?

4 Q I was looking in the lower right-hand corner. Do  
5 you see the disturbances in there?

6 A Down here?

7 Q Yes.

8 A I see some differences in color. I don't know  
9 what kind of disturbance it might have been due to.

10 Q You didn't consider those in forming your opinion?

11 A No.

12 Q And did you note in forming your opinion the  
13 position of any particular parts of the airplane in this  
14 particular area?

15 A The only parts of the aircraft I recognize are  
16 here and here.

17 Q Do you see the fairly large pieces of airplane  
18 that are this side of the T-tail?

19 A Are you referring to this?

20 Q No, up toward the T-tail in this area. (Indicating.)

21 A I see something; I don't know what it is.

22 Q Did anyone ever identify for you anything in there?

23 A No, sir.

24 Q I want you to assume for purposes of what we  
25 are doing that the larger pieces and piece in there is part

1 of the cargo floor of this airplane, and just make that  
2 assumption, okay?

3 A Okay.

4 Q The next one.

5 Now, you mentioned in response to one of Mr.  
6 McManus' questions this morning, that you had also reviewed  
7 some computer, aerial computer enhanced photographs.

8 Do you remember that?

9 A The ones I referred to were laser enhancements.

10 Q Laser enhancements.

11 Did you have an opportunity to review the  
12 contrast stretched photographs that were done by ITEK?

13 A I don't know of any such -- in relationship to  
14 this proceeding?

15 Q Yes, sir.

16 A No, I don't recall anything like that.

17 Q Are you familiar with that process?

18 A Contrast stretching, yes, sir, I am familiar  
19 with that process.

20 Q Is that, in effect -- just for use of better  
21 words -- is that something like adjusting contrast, for  
22 example, on a television set?

23 In other words, you are looking at the same  
24 photograph and doing nothing but contrast stretching it in  
25 the print?

1 A Yes, you could say it that way.

2 Q It really doesn't change anything in there, it is  
3 clarification, the clarification process.

4 Is that correct?

5 A Yes.

6 Q And that is an accepted practice, is it not, sir?

7 A Yes.

8 Q Okay.

9 A I might also add there are various ways that  
10 you can contrast stretch; there are curvilinear approaches  
11 and linear approaches and you will get a different result  
12 each time.

13 Q Okay.

14 Can we approach the bench, Your Honor?

15 THE COURT: Yes.

16 Ladies and gentlemen, if you want to stretch,  
17 please do.

18 (AT THE BENCH.)

19 MR. DUBUC: I would like to show him about five  
20 or six -- how many do we have?

21 MR. CONNORS: Six pictures.

22 MR. DUBUC: They do tie into the area.

23 THE COURT: Have the plaintiffs seen them?

24 MR. DUBUC: They have seen them and got them.  
25 I don't know whether they have an objection or not, and I

1 wanted to raise it before we flashed them on the screen.

2 MR MC MANUS: I would like to point out that some  
3 of these pictures haven't been objected to because I didn't  
4 want to interrupt Mr. Dubuc's presentation, but the pictures  
5 have not been on anybody's exhibit list.

6 MR. DUBUC: They are.

7 MR. CONNORS: They were enlargements made from  
8 the motion picture which have been included on our list.

9 THE COURT: You mean this witness hasn't had a  
10 chance to study them in a still form?

11 MR. CONNORS: He has had them. He had them on  
12 the witness stand on Friday. He saw them.

13 THE COURT: He didn't have them before the trial?

14 MR. DUBUC: Oh, yes.

15 MR. CONNORS: They were produced at the deposition.

16 MR. MC MANUS: That was Friday before the trial.  
17 I'm not accusing Mr. Connors of doing anything. My trouble  
18 is we don't have those numbers. So he did give us still  
19 photos of the movie but when they introduced these numbers  
20 we don't have any way to follow that because they haven't  
21 been put on any list.

22 MR. DUBUC: It is a question of numbering, then.

23 MR. MC MANUS: When you just give the number  
24 out of the blue, we don't know if we have that actual  
25 picture that you are associating with. I asked you before

1 lunch to show me the things you were going to use.

2 MR. DUBUC: You asked me?

3 MR. MC MANUS: I said if there were any other  
4 things you were going to use, please let us know what they  
5 were.

6 MR. CONNORS: I advised you.

7 MR. MC MANUS: We don't have those numbers.

8 THE COURT: Do you want to offer -- the ITEK  
9 photos, have you seen them?

10 MR. DUBUC: Yes, sir.

11 THE COURT: I am asking him.

12 MR. MC MANUS: We have certain photos.

13 THE COURT: Show it to them right now, right up  
14 here.

15 MR. MC MANUS: We got them Friday before the  
16 trial.

17 MR. DUBUC: Your Honor, we realize that everybody  
18 has a number problem.

19 We have three different numbers for everyone  
20 of their exhibits and we have been trying to work those  
21 numbering problems out because of the timeframe.

22 Everyone of the plaintiffs' exhibits has at least  
23 three numbers.

24 MR. CONNORS: The first picture would be the  
25 picture without the boxes.

1 THE COURT: Have you seen these?

2 MR. MC MANUS: I have seen a photo similar to  
3 the first one.

4 THE COURT: Have you seen this one?

5 MR. MC MANUS: I have seen photos similar to those  
6 Yes, sir. They could be the same. We have seen some of  
7 these pictures that they have gone through the laser  
8 process with.

9 THE COURT: Have you seen them after they went  
10 through the laser process?

11 MR. CONNORS: This is not the laser ---

12 MR. DUBUC: This is the contrast stretch.

13 THE COURT: What is your objection, if any?

14 MR. MC MANUS: The original objection was that  
15 without knowing the numbers, I did not know whether or not  
16 these were exhibits and whether or not we had ever seen  
17 these.

18 THE COURT: Now do you know?

19 MR. MC MANUS: Yes, sir.

20 I have seen pictures similar to these.

21 THE COURT: Do you have an objection to using  
22 this on cross-examination?

23 MR. LEWIS: Your Honor, we would object to them  
24 on the basis of surprise. If we got them Friday before  
25 the trial, which started on Monday, we would at least like

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1 the opportunity to discuss them with our witness and give  
2 him an opportunity to study them.

3 THE COURT: What has he been doing from Friday  
4 until now?

5 MR. DUBUC: Mr. Connors advises me, Your Honor,  
6 that these pictures were produced earlier than Friday. What  
7 was produced Friday were, I guess, slides from the pictures.

8 MR. CONNORS: Copies from these, and I believe  
9 they also had copies -- when we first mentioned the ITEK  
10 series, we produced 42 slides of these pictures, including  
11 these pictures.

12 THE COURT: Have you had a chance to discuss these  
13 with this witness?

14 MR. MC MANUS: Not in detail, no.

15 THE COURT: How about in general?

16 MR. MC MANUS: I believe he has seen those  
17 pictures. Yes, sir.

18 MR. LEWIS: He has seen them.

19 THE COURT: Do you have anything else to add?

20 MR. LEWIS: No, sir.

21 THE COURT: Objection overruled.

22 MR. DUBUC: Thank you, Your Honor.

23 (IN OPEN COURT.)

24 MR. DUBUC: May we have the next one.

25 MR. CONNORS: D-1364, Plaintiffs' 1000-88.

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1 BY MR. DUBUC:

2 Q Doctor, that depicts -- we have seen this before  
3 and I just want to put it in the proper frame.

4 That depicts the area we have just been looking  
5 at next to the T-tail at the end of that line of disruption

6 Do you remember that?

7 A Yes, sir.

8 Q And do you remember I asked you to note a couple  
9 of enlarged pieces?

10 A Yes, sir.

11 Q I want you to assume for the purposes of these  
12 questions that those are these pieces right here, which I  
13 want you to assume are the pieces of the cargo compartment.

14 A All right.

15 MR. CONNORS: D-1365.

16 BY MR. DUBUC:

17 Q Doctor, did you have occasion to just look at --  
18 I don't know to what extent you examined it, but looked  
19 at pictures similar to this?

20 A Yes, sir, I have seen these in the same format  
21 that we are viewing them now, the slide form.

22 Q When did you see those?

23 A Oh, it's been perhaps ten days ago.

24 Q And were you told the source of the pictures?

25 A No, sir.

1 Q Well, I will advise you these are ITEK pictures.  
2 This particular picture, of course, is the same picture we  
3 just saw before.

4 A Yes.

5 Q And you will note that there are some field  
6 boundaries laid out here for the next group of pictures.

7 They are broken down into those areas, A, B, C,  
8 D and E.

9 The next one.

10 MR. CONNORS: D-1466.

11 BY MR. DUBUC:

12 Q Have you seen that picture in that group you  
13 saw before?

14 A I have seen it. I haven't studied it in any way.

15 Q You notice those pieces, again, that I previously  
16 remarked about, and I want you to assume those again are  
17 the cargo, parts of the cargo compartment floor.

18 A Could we possibly move this ---

19 Q Oh, I'm sorry. Okay.

20 A Thank you.

21 Yes, those are the pieces you want me to pay  
22 attention to.

23 Q And near those pieces, are you able to observe  
24 some ground disturbance in a line running parallel to those  
25 pieces?

1 A No, running parallel -- I see several markings  
2 on the ground that are at right angles to that, but not  
3 going in the same direction.

4 Q Well, do you see any going in this direction?

5 A Again, I am going to have to ---

6 Q Sure, come on up.

7 A The markings that I referred to are running in  
8 this direction, and they are fairly obvious. I see the one  
9 that you pointed out here which seems to be a field boundary.

10 THE COURT: Seems to be what?

11 THE WITNESS: Seems to be a field boundary.

12 THE COURT: Right.

13 THE WITNESS: A dike.

14 BY MR. DUBUC:

15 Q Do you see anything else, up in here, for example?

16 A I see this line, and I can faintly make out  
17 one here, and again those -- with imagination I can see  
18 a series in here, and they all appear to be related to the  
19 cultivation pattern in some fashion.

20 Q All right.

21 The next one.

22 MR. CONNORS: D-1367.

23 BY MR. DUBUC:

24 Q Have you seen this one, too, Doctor?

25 A Yes, I have seen that.

1 Q All right.

2 In examining that, did you note any, again, any  
3 disturbances, ground disturbances running in this direction  
4 of this picture?

5 And specifically we are looking at, I think, up  
6 in this area.

7 MR. CONNORS: May I?

8 MR. DUBUC: Right here?

9 MR. CONNORS: Here.

10 BY MR. DUBUC:

11 Q Our reference point is here again.

12 Are you able to see anything in there?

13 A I can see, my imagination allows me to see a  
14 whole series of such marks.

15 Q Ground disturbances?

16 A I don't know if I could go so far to say they  
17 are ground disturbances. They seem to be lineations. I can  
18 also see some -- I see on there, I see a series of them  
19 in here.

20 I see some in here that almost appear to be  
21 fan-shaped, but then one very prominent one in there.

22 Q All right.

23 What you do, as you say using your imagination,  
24 you see some there, correct?

25 A It requires imagination.

1 Q Okay.

2 MR. CONNORS: D-1368.

3 BY MR. DUBUC:

4 Q That's another one of those frames from that  
5 original picture. How about in that picture, do you see  
6 any disturbances running in parallel lines through the  
7 middle of the picture?

8 A You're asking for quite a bit of imagination.  
9 I see, again, a whole series of such lineations, and they  
10 may even be vegetation lines.

11 Q All right.

12 The next one.

13 MR. CONNORS: D-1369.

14 BY MR. DUBUC:

15 Q How about in there, Doctor?

16 A These are very prominent here.

17 Q How about back in here? Next to these parts, do  
18 you see anything in there that looks like ground disturbances  
19 in parallel lines?

20 A I see a swath in here, but that swath is wider  
21 than those two marks.

22 Q All right.

23 And can we have the next one?

24 MR. CONNORS: D-1370.

1 BY MR. DUBUC:

2 Q We have down here, you certainly can see those  
3 lines, those that appear in different angles on the other  
4 photographs -- you have seen them?

5 A Yes.

6 Is that the complete series in that set?

7 Q Yes.

8 THE COURT: Don't walk off with the mike, you  
9 will hang yourself.

10 BY MR. DUBUC:

11 Q Doctor, taking the original exhibit where you  
12 have, you remember we had several boxes marked and superimposed  
13 on -- superimposed on the original picture showing the  
14 troop compartment and the T-tail and so on.

15 Taking those and running them through, the last  
16 picture had some marks that just were at the lower right --  
17 let's flash the other one back on again.

18 THE COURT: Do you want to turn off that mike.

19 Go ahead.

20 BY MR. DUBUC:

21 Q Do you remember, Doctor, the last one we had  
22 the troop compartment, and the next to last one we had slight  
23 tracks up in the right-hand corner?

24 A Yes, sir.

25 Q Assuming that at this end of that sequence and

1 the beginning marks and those you used your imagination to  
2 see, are you able to state with reasonable scientific  
3 certainty that without some further examination of what you  
4 have just seen, there are not interrupted tracks -- they  
5 are not uninterrupted tracks in some degree?

6 A I want to make sure we are not dealing with a  
7 double negative.

8 Q Well, let me try it again. I want to be sure  
9 of that, too.

10 Are you able to state having seen these pictures,  
11 and I realize you haven't had a chance to analyze them, so  
12 my question is: Having seen these pictures, are you able  
13 to state your opinion that these tracks, from the troop  
14 compartment back to where they have the original interruptions,  
15 are interrupted tracks?

16 A The evidence I gained from examining these  
17 enlargements, A, B, C, and E, is that those lineations that  
18 you asked me to imagine are wider than -- and if they exist --  
19 more numerous than the object that presumably made them.

20 So I would have to conclude from that that they  
21 are not connected with the troop compartment, but rather  
22 are artifacts of the processing, the form of the processing,  
23 or they are related to man's, the cultivation practices in  
24 that area.

25 THE COURT: Doctor, I think that is not the

1 question you were asked.

2 MR. DUBUC: It's almost, Your Honor. I can  
3 follow up, and I would like to ask him something ---

4 THE COURT: No, you asked a question about whether  
5 wasn't your question whether in light of that, did he have  
6 an opinion as to a reasonable scientific certainty as to  
7 whether the tracks were interrupted?

8 MR. DUBUC: Then I think he asked me to repeat it.

9 THE COURT: Have you asked that question?

10 MR. DUBUC: I haven't, but I am going to get to  
11 it again.

12 BY MR. DUBUC:

13 Q Doctor, you mentioned the tracks were wider than  
14 the object you assume made them. Did you measure them?

15 A I don't need to. I can ---

16 Q Just by eye?

17 A Just by eye.

18 Q Can we go back to that troop compartment, the  
19 big picture of the troop compartment?

20 Well, whether or not they are the same width,  
21 would you agree they are in parallel lines, parallel straight  
22 lines, whatever the disturbances are?

23 A Yes.

24 Q Doctor, in examining this picture and others of  
25 this troop compartment, did you notice the area of structure

1 that extends on this side and on pictures on the other side  
2 we will look at in a minute?

3 A I have not paid any particular attention to those,  
4 no.

5 Q And those do extend out horizontally from the  
6 side of the troop compartment, do they not?

7 A They appear to, yes.

8 Q And beyond the actual measurement of the troop  
9 compartment?

10 A They appear to be, yes.

11 Q Okay.

12 Now, Doctor, this is another picture of the  
13 track marks of the troop compartment itself. Is that correct?

14 A Yes.

15 Q And is that water, in your opinion, in those  
16 tracks?

17 THE COURT: Has he seen this?

18 MR. DUBUC: Pardon?

19 THE COURT: Has the doctor seen this before?

20 MR. DUBUC: I believe this is out of his report,  
21 Your Honor.

22 MR. CONNORS: D-1373, Plaintiffs' 1000-117.

23 THE COURT: All right.

24 MR. DUBUC:

25 Q I thought I heard you mention this morning, and

1 I may have been wrong, and you correct me if I'm wrong, but  
2 did you mention that in your opinion the depth of these  
3 marks was greater on this end than they were on this end?

4 A Yes, sir.

5 Q So the impression into the soft soil was to a  
6 lesser depth on this end than it was on the other end?

7 A Yes, sir.

8 Q Okay.

9 And did I understand from your testimony on Friday  
10 that that vegetation line up here was one of the bases of  
11 your opinion that you indicated relevant to an elevation of  
12 some kind at the forward end of the troop compartment?

13 A That was one of the lines of reasoning. Yes, sir.

14 Q All right.

15 MR. CONNORS: D-1374.

16 BY MR. DUBUC:

17 Q This is another one of the troop compartment.

18 Doctor, did you notice the structure, as I  
19 mentioned before, that protrudes horizontally out from  
20 the troop compartment?

21 We have seen the other side, and this shows the  
22 left side better than the other one did.

23 A I observe it now, and I haven't paid any  
24 attention to it in the past.

25 Q That is wider than the troop compartment measurement

1 isn't it, sir?

2 A Yes.

3 Q Does the blue shiny area around the troop  
4 compartment there, is that water, is that the standing water  
5 that you mentioned in your earlier testimony?

6 A Yes, sir.

7 MR. CONNORS: D-1375.

8 BY MR. DUBUC:

9 Q I have several shots here, and I want to be sure  
10 that we touch all sides. There, again, do we have standing  
11 water where the blue appears?

12 A Yes, sir.

13 Q Virtually all around the troop compartment, the  
14 back and certainly both sides here.

15 Is that correct?

16 A Yes, sir.

17 Q Now, that would indicate that ground is level?

18 A Well, it would indicate -- well, wherever you  
19 see the water, that is all at the same level.

20 Q Well, it is certainly level at least in this  
21 angle, and it is level almost out to the front end of the  
22 compartment here. We have blue water on the left-hand side  
23 up toward the front, and we will go all the way around but  
24 is that correct?

25 A Yes.

1 MR. CONNORS: D-1376.

2 BY MR. DUBUC:

3 Q And that shows blue as well, and that shows blue  
4 almost to the front of that troop compartment, doesn't it?

5 A Yes.

6 Q Which would mean, based upon what I understand  
7 your testimony to be, that it is the same level, wherever we  
8 see this water.

9 Is that correct, sir?

10 A Yes.

11 MR. CONNORS: D-1377.

12 BY MR. DUBUC:

13 Q And here again we have some blue and some foliage  
14 interspersed, but, again, you see there's some blue right  
15 up at the end of that troop compartment?

16 A Yes. I'm also beginning to see some islands in  
17 that blue.

18 Q Okay.

19 In fact, we have some foliage right here, don't we?

20 A Yes, sir.

21 Q Did you make any determination of whether there  
22 were any rises on the side of the troop compartment to either  
23 side, or would that be just foliage?

24 A I haven't made a determination, but I would assume  
25 based on my experience that where that vegetation is a

1 little bit taller, and also the ground level is higher.

2 Q I thought you just told us that with respect to  
3 the vegetation in front of the dike, that you wouldn't be  
4 able to tell whether the ground was higher or not with the  
5 vegetation on top of it?

6 A In this particular instance, where we have a lot  
7 of water in the scene, and assuming that that water seeks  
8 its own level, then where you have material above it, it  
9 would appear to be a higher elevation.

10 In the previous example, we were looking at  
11 a riverbank and not a situation that was entirely -- it  
12 wasn't as much water on the scene.

13 The topographic situation, sir, is different.

14 Q I see. Okay.

15 Let's have the next one.

16 MR. CONNORS: D-1378.

17 BY MR. DUBUC:

18 Q Now, we have got some water again on this same  
19 side, and do you notice that that water is just about even  
20 with the front of this troop compartment end?

21 A Yes, sir.

22 Q All right.

23 Indicating at least where we see that water that  
24 it's level. Is that a fair statement, sir?

25 A To the -- if I were coming back toward us out of

1 the picture, it appears to be -- there appears to be some  
2 water.

3 Q All right.

4 A Forward of the end of the troop compartment,  
5 there does not appear to be any water.

6 Q All right.

7 Let's have the next one.

8 MR. CONNORS: D-1379.

9 BY MR. DUBUC:

10 Q That's about the same only slightly more forward.

11 Do you see the same water there?

12 A Yes, sir.

13 Q All right.

14 Let's have the next one.

15 MR. CONNORS: D-1380.

16 BY MR. DUBUC:

17 Q Now, do you see some water up near that forward  
18 corner?

19 A I see the same pattern I have been looking at.

20 Q I'm looking right here.

21 A Yes, sir.

22 Q Is that water?

23 A It appears to be. Yes, sir.

24 Q All right.

25 That is even with or maybe slightly in front of

1 the troop compartment. Isn't it, sir?

2 A I wouldn't go that far. I think the angle is  
3 deceiving there.

4 Q All right.

5 Let's have the next one.

6 MR. CONNORS: D-1381.

7 MR. DUBUC: Let's have the next one.

8 MR. CONNORS: D-1382.

9 THE WITNESS: That is a good example of how  
10 deceiving those angles can be.

11 BY MR. DUBUC:

12 Q Do you see some blue up near the corner of that  
13 troop compartment?

14 A In this picture it appears to be aft of the nose  
15 end of the troop compartment.

16 Q Do you see this little line of blue in here?

17 A I see it, but I'm not sure that it is water.

18 Q Are you sure?

19 Would you agree with me that it appears to be  
20 blue?

21 A From where I'm sitting it does, but not all  
22 things that are blue in that picture are necessarily of  
23 water.

24 Q Would it be a fair statement, sir, we are making  
25 a determination of what is water in these pictures based

1 on color?

2 A I see some blue on the troop compartment itself,  
3 and I cannot interpret that to be water.

4 Q No. I'm talking about, sir, with respect to  
5 water, would it be fair that your basis for determining  
6 whether there is water present or not present is based on  
7 the color?

8 A That is fair, yes.

9 MR. DUBUC: The next one.

10 MR. CONNORS: D-1383.

11 BY MR. DUBUC:

12 Q That is parallel to the troop compartment,  
13 and there is some foliage around, and we see water on the  
14 left side.

15 Sir, I'm not sure I understood your opinion  
16 about an elevation, but would you say, sir, in looking at  
17 this picture that if there is any elevation, it is very  
18 slight?

19 A I have always thought that the elevational  
20 rise, it was a slight rise.

21 Q So it is not a hill, it is a very slight rise,  
22 is that all?

23 A I agree.

24 Q And would you also agree we do have some foliage  
25 in front of that troop compartment, do we not?

1 A Yes, sir.

2 Q And it is difficult, is it not, to determine  
3 whether we actually have ground or plants from some of these  
4 camera angles?

5 A That is correct.

6 Q And would you agree that a camera angle such as  
7 this directly perpendicular to the line of direction of  
8 the troop compartment, is somewhat helpful as opposed to  
9 a horizontal view of the troop compartment against the  
10 horizon in the background?

11 A Yes, I would agree to that, and also the pictures  
12 taken westward of the forward end of the troop compartment,  
13 and looking back toward the east are equally useful.

14 Q But as far as determining the precise, or as  
15 precise as we can be, position of the forward end of that  
16 troop compartment, an angle such as this, directly  
17 perpendicular to what, if anything, might be located in  
18 front of it, is a fair and useful picture, is it not, sir?

19 A Yes.

20 Q Okay.

21 The next one.

22 MR. CONNORS: D-1351.

23 BY MR. DUBUC:

24 Q Now, looking at that one, sir, do you note  
25 some bluish tint to the side and also just either parallel

1 or slightly in front of the troop compartment down in this  
2 area?

3 A I would draw the line differently, sir, if I may?

4 Q All right.

5 THE COURT: Don't fool with that, just raise your  
6 voice.

7 THE WITNESS: Okay.

8 The area that you outlined includes this?

9 BY MR. DUBUC:

10 Q Right.

11 A The line I would draw, based on the blue tones,  
12 comes out more like this.

13 Q All right.

14 A This may be a part of -- in fact, I would  
15 interpret it to be the same tone as this, which is as much  
16 black as it is blue and may, in fact, relate to another  
17 phenomenon and not water.

18 Q All right.

19 I notice here, just before we leave this picture  
20 and go to another subject, we have areas of green foliage  
21 here, very green, is it not?

22 A Yes, sir.

23 Q Right immediately -- for example, there is some  
24 almost immediately adjacent to the front of the troop  
25 compartment?

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1 A That's correct.

2 Q And there is some over here to the right, and  
3 there is also one just here on the left, is it not?

4 A Yes.

5 Q And, in fact, there's some up behind?

6 A That's correct.

7 Q Okay.

8 The next one please.

9 MR. CONNORS: D-1352.

10 BY MR. DUBUC:

11 Q How about that one? The blue that shows in  
12 front, would you say that is blue or black?

13 A This area is more blackish; I see a little more  
14 blue in here.

15 Q Now if this is blue, then that would indicate  
16 some standing water in that area, would it not?

17 A Yes. And as I have indicated in my report,  
18 from other views, which you may get to, looking from this  
19 area to the lower right, it is possible to define a line  
20 of slope inflection, which extends off to the left of the  
21 photograph and comes through this area and extends off to  
22 the right of the photograph.

23 And as I have stated in the report, it is  
24 difficult to follow that line of inflection right at the  
25 nose end of this troop compartment because of the coloration

1 differences in the vegetation itself.

2 Q Looking at that angle, of course, there is no  
3 hill of any kind directly in front of the troop compartment,  
4 but we can see the floor, can't we?

5 A I beg your pardon? I can see the floor of what?

6 Q You can see the bottom of the troop compartment  
7 here?

8 A I can't make that interpretation myself.

9 Q Okay.

10 The next one.

11 MR. CONNORS: D-1384.

12 BY MR. DUBUC:

13 Q That shows some water down in the right-hand  
14 side forward of the front end, does it not, sir?

15 A There is some blue in here, yes, that is correct.

16 Q So that would indicate that ground is level,  
17 does it not, according to your hypothesis?

18 A Well, it indicates that the water level is  
19 level.

20 Q The water level is level.

21 A What happens below the water level, I don't know.

22 Q But, in other words, that would indicate, according  
23 to what I understand of your testimony this morning, to  
24 be that if this is a water table in this area, then where  
25 we have standing water, indicating blue, that we have level

1 ground in the areas that we have standing water.

2 Is that correct?

3 A Based on this photograph -- yes, that is the  
4 answer.

5 Based on this photograph, it appears one would,  
6 that this may be a little island, higher ground, surrounded  
7 by water.

8 This may also be slightly higher, and it's  
9 possible to draw a line that comes in something like this,  
10 and comes out on the other side something like that.

11 So that this would have interrupted that slope  
12 inflection in some way, in such a manner that we can't  
13 precisely draw the line.

14 Q Of course, we can't see underneath the troop  
15 compartment here, but would you agree that it is possible  
16 that there is water under there as well?

17 You can't tell one way or the other. Is that  
18 correct?

19 A That's true.

20 Q Okay.

21 The next one.

22 Now, sir, we mentioned this morning the method,  
23 which I think was in that manual of the association of  
24 photogrammetry, which was stereo photography.

25 I think you told us that is used sometimes to

1 determine elevation, isn't it?

2 A Vertical area photographs are used for measuring  
3 elevations, not oblique aerial photographs.

4 Q You have not used them obliquely?

5 A The equation does not permit you to do that.

6 Q I gather from your answer that you have not --  
7 am I correct? -- you have not attempted to do any stereo  
8 analysis relevant to the elevation which was the subject  
9 of your testimony on Friday and this morning?

10 A I have not because in order to do stereoscopic  
11 analysis, it requires two photographs separated by an  
12 optical distance, as it's known in the discipline.

13 I do not have stereo photographs, so I cannot  
14 make such measurements.

15 Furthermore, in order to make those measurements,  
16 you need to have vertical aerial photographs, and all of  
17 the photographs I have seen are oblique.

18 The parallax equation will not permit you to  
19 make height measurements off of oblique photographs even  
20 if you do have a stereo pair.

21 Q All right, sir.

22 You had mentioned, I think last Friday, that  
23 you had made one or more transparencies of some of these  
24 pictures.

25 Is that correct?

1 A That is correct.

2 Q And is that basically the process that is done  
3 in the stereo analysis?

4 You make transparencies of, as you say, one or  
5 more comparative photographs?

6 A In the analysis that I did, I ---

7 Q I'm sorry, that wasn't the question.

8 The question is: If you are doing this stereo  
9 analysis relevant to elevations, is it in the process of  
10 transparencies of one, two, three or four pictures, and  
11 then the comparison of those pictures?

12 A Yes. That is a method.

13 Q So the only question would be whether you wanted  
14 to select some pictures and go to the process of making  
15 some transparencies if you wanted to try to do this with  
16 some of these photographs.

17 Is that correct?

18 A I haven't seen any stereo pair, so it is not  
19 a matter of selecting. There is nothing to select from.

20 Q Okay.

21 What is our next one?

22 MR. CONNORS: D-1385.

23 BY MR. DUBUC:

24 Q Now, that is another one of the troop compartment  
25 from the other side, and I would ask you to note again the

1 position of the -- first of all, the position of any  
2 vegetation, and you mentioned a line of vegetation, and  
3 second of all, you notice again the blue here and the line  
4 of vegetation appears to go around the side of the troop  
5 compartment.

6 Did you note that in forming your opinion?

7 A. Yes, I did note that.

8 Q. Okay.

9 And, again, looking at that picture, if there  
10 is any elevation there, it is slight, if at all.

11 Is that correct?

12 A. I determined that it is a slight elevation.

13 MR. DUBUC: Okay.

14 MR. CONNORS: D-1350.

15 BY MR. DUBUC:

16 Q And this is another one from this side that  
17 shows a vegetation line, does it not, a line that does not  
18 quite touch the troop compartment?

19 A I don't know which line you're referring to,  
20 the precise one.

21 Q Here.

22 A Yes, I can agree with that.

23 Q All right.

24 And there is standing water again on this side.

25 Is that correct?

1 A In the lower left.

2 Q All right.

3 The next one.

4 MR. CONNORS: D-1386.

5 BY MR. DUBUC:

6 Q And that is from the rear again?

7 A Yes. That shows a water boundary fairly  
8 definitively, I think.

9 Q All right.

10 The next one.

11 MR. CONNORS: D-1387.

12 BY MR. DUBUC:

13 Q Again, water, standing water is level. Is that  
14 correct?

15 A Yes.

16 Q Okay.

17 Now, you mentioned in your testimony, Doctor,  
18 something about checking your opinion as to an elevation  
19 by using the position of a helicopter that you had observed?

20 A Yes, sir.

21 Q And I would like to show you a couple of pictures  
22 of the helicopters that are in this area and see if I can  
23 find out which model you were talking about.

24 A Yes, sir.

25 MR. CONNORS: D-1393. Plaintiffs' 5247.

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1 BY MR. DUBUC:

2 Q Is that the model of the helicopter you were  
3 referring to?

4 A The helicopter I'm referring to is at the middle  
5 distance of that photograph and slightly to the right of  
6 center.

7 Yes, sir.

8 Q Right here?

9 A Yes, sir.

10 Q And your view was that that picture shows some  
11 kind of elevation of the helicopter sitting on it?

12 A Yes, sir.

13 If I may --

14 Q This is the cockpit here, is it not?

15 A That is my understanding, yes.

16  
17  
18  
19 (Continued on next page.)  
20  
21  
22  
23  
24  
25

1 Q. AND THE TROOP COMPARTMENT WE ARE TALKING ABOUT  
2 IS OVER HERE?

3 A. YES, SIR.

4 Q. ALL RIGHT.

5 A. SPECIFICALLY, I WAS REFERRING TO THE SLIGHT ANGLE  
6 OBSERVABLE HERE, AND ALSO THE SLIGHT ANGLE ON THE CREW  
7 COMPARTMENT, WHICH WOULD SUGGEST THAT THERE IS A SLIGHT  
8 SLOPE THERE.

9 Q. WELL, SIR, ACCORDING TO YOUR DIAGRAM, WHICH IS  
10 PLAINTIFFS' EXHIBIT 248, THAT COCKPIT THAT THE HELICOPTER  
11 IS NEXT TO IS SOME DISTANCE, ISN'T IT, FROM THE TROOP COMPART-  
12 MENT?

13 A. YES, SIR.

14 Q. SO ARE YOU SAYING THAT THAT ANGLE THERE IS THE  
15 BASIS FOR YOUR OPINION AS TO AN ELEVATION OF THE TROOP  
16 COMPARTMENT SOME DISTANCE AWAY?

17 A. USING -- YES.

18 Q. ALL RIGHT.

19 A. USING SIMILAR PHOTOGRAPHS THAT ARE MORE VERTICALLY  
20 ORIENTED --

21 Q. YES.

22 A. (CONTINUING) -- THERE IS A LINE THAT CAN BE DRAWN  
23 ALONG HERE.

24 Q. ALL RIGHT. THE NEXT ONE.

25 MR. CONNORS: D-1394, PLAINTIFFS' 5239.

1 BY MR. DUBUC:

2 Q. NOW, THERE IS A SIMILAR HELICOPTER RIGHT THERE.

3 DO YOU SEE THAT IN THE FOREGROUND?

4 A. THIS ONE?

5 Q. YES.

6 A. YES.

7 Q. THAT IS THE SAME TYPE OF HELICOPTER; IS IT NOT?

8 A. I DON'T KNOW. I --

9 Q. LET'S FLASH IT BACK.

10 A. THEY LOOK SIMILAR TO ME.

11 Q. THAT APPEARS TO BE SITTING SLIGHTLY UP, TOO,  
12 NOSE UP; DOES IT NOT?

13 A. YES, SIR, IT DOES.

14 Q. THAT APPEARS TO BE A FLAT RICE PADDY IT IS SITTING  
15 ON; DOES IT NOT?

16 A. YES, BUT I MIGHT ALSO POINT OUT THAT THERE IS  
17 ANOTHER ONE HERE, AND IT HAS THE SAME ANGLE ON IT THAT  
18 THE EARLIER SLIDE HAD.

19 Q. SIR, DO YOU KNOW, OR DID YOU MAKE ANY EFFORT  
20 TO FIND OUT, OR TO ASK ANY QUESTIONS AS TO WHAT THE NORMAL  
21 SITTING/LANDING POSITION OF THAT TYPE HELICOPTER WOULD  
22 BE?

23 A. NO, SIR, I DID NOT.

24 Q. ASSUMING THIS TO BE A RICE FIELD, AT LEAST A  
25 FIELD WITH SIMILAR WATER-TABLE CHARACTERISTICS AS THE

1 SURROUNDING GROUND, WHERE WE SEE THE MARKS, IT WOULD BE  
2 FLAT; WOULD IT NOT?

3 A. YES, I WOULD AGREE WITH THAT.

4 Q. AND WOULD THAT SUGGEST TO YOU THAT, ASSUMING  
5 THAT IS FLAT, THAT THE NORMAL SITTING POSITION OF THAT  
6 HELICOPTER IS SLIGHTLY NOSE-UP?

7 A. YES.

8 Q. THANK YOU.

9 MR. DUBUC: IS THERE ANOTHER ONE?

10 MR. CONNORS: NO.

11 MR. DUBUC: ALL RIGHT.

12 BY MR. DUBUC:

13 Q. DOCTOR, YOU GAVE AN OPINION RELEVANT TO YOUR  
14 ANALYSIS OF VEGETATION COLORATION?

15 A. YES, SIR.

16 Q. DICOLORATION, AND SO ON; DO YOU REMEMBER THAT?

17 A. COLORATION, VARIATIONS IN COLOR.

18 Q. ALL RIGHT.

19 I WOULD LIKE TO ASK YOU A COUPLE OF QUESTIONS AS TO  
20 A COUPLE OF THESE EXHIBITS.

21 FIRST OF ALL, I THOUGHT I HEARD YOU MENTION THIS  
22 MORNING THAT -- WITHDRAWN.

23 FIRST OF ALL, LET'S LOOK AT THIS FIRST.

24 MR. CONNORS: THIS ONE?

25 MR. DUBUC: YES.

1 MR. CONNORS: PLAINTIFFS' EXHIBIT 5211.

2 BY MR. DUBUC:

3 Q. YOU HAVE SEEN THIS ONE; HAVE YOU NOT, SIR?

4 A. I HAVE SEEN SOMETHING VERY SIMILAR TO THAT, I  
5 AM SURE.

6 Q. NOW, THE QUESTION I HAD ABOUT THIS PARTICULAR  
7 EXHIBIT, DOCTOR, IS THAT THERE APPEARS TO BE DISCOLORATION  
8 HERE, BUT THERE ALSO APPEARS TO BE GREEN-GROWING PORTIONS,  
9 SOME NEW GROWTH.

10 DID YOU NOTICE THAT?

11 A. YES. BUT HOW YOU DETERMINE THAT THIS IS NEW  
12 GROWTH --

13 Q. WELL, I AM NOT. I GUESS THAT IS MY CHARACTERIZATION,  
14 BUT THERE ARE SOME GREEN GROWTHS MIXED IN WITH SOME OF  
15 OTHER DISCOLORATIONS HERE; ARE THERE NOT?

16 A. THAT IS CORRECT.

17 Q. OKAY.

18 MR. CONNORS: PLAINTIFFS' 5205.

19 BY MR. DUBUC:

20 Q. SIMILARLY, IN THIS PICTURE, VERY CLOSE TO THE  
21 TROOP COMPARTMENT, WE HAVE ALSO GOT SOME GREEN GROWTHS  
22 OVER HERE, SPGRADICALLY IN WITH THE OTHER, DIFFERENT-COLORED  
23 VEGETATION; IS THAT CORRECT?

24 A. YES.

25 Q. ALL RIGHT. AS WELL AS SOME GREEN, WITH CHLOROPHYLL,

1 I GUESS, IN IT, GROWTH NEXT TO THE FUSELAGE; IS THAT CORRECT,  
2 SIR?

3 A. YES.

4 Q. GREEN IN PLANTS IS CREATED BY THE EXISTENCE OF  
5 CHLOROPHYLL; IS IT NOT?

6 A. AS A RULE, YES.

7 Q. AND WHEN YOU REMOVE CHLOROPHYLL, YOU GET A DISCOLORA-  
8 TION OF THE PLANT; IS THAT CORRECT?

9 A. YES, SIR.

10 MR. DUBUC: YOUR HONOR, I AM SITTING, BECAUSE  
11 I WANT TO STAY OUT OF THE WAY. I AM NOT TRYING TO --

12 THE COURT: THAT IS QUITE ALL RIGHT, MR. DUBUC.

13 BY MR. DUBUC:

14 Q. ALL RIGHT.

15 MR. DUBUC: WHAT EXHIBIT NUMBER IS THIS, MR.  
16 CONNORS?

17 MR. CONNORS: D-1398.

18 BY MR. DUBUC:

19 Q. THAT ALSO SHOWS SOME GREEN INTERSPERSED WITH  
20 THE OTHER BROWNISH COLORATION; DOES IT NOT?

21 A. YES.

22 Q. AND ARE YOU ABLE TO TELL WHETHER THAT IS NEW  
23 GROWTH OR OLD GROWTH?

24 A. I HAVE AN OPINION ON IT. I AM NOT SURE THAT  
25 I WOULD PHRASE THE OPINION IN THE TERMS THAT YOU HAVE.

1 Q. ALL RIGHT. WHAT IS YOUR OPINION?

2 A. IT APPEARS TO ME, SIR, THAT THERE MAY BE SEVERAL  
3 SPECIES INVOLVED, SPECIES OF PLANTS INVOLVED IN THAT PARTICULAR  
4 PICTURE, AND THAT SOME OF THE PLANTS HAVE LOST THEIR  
5 CHLOROPHYLL, BUT THERE ARE CERTAIN OTHER ONES THERE THAT  
6 HAVE NOT.

7 Q. ALL RIGHT.

8 A. SO I CAN'T CHARACTERIZE IT AS NEW GROWTH OR OLD  
9 GROWTH OR REGROWTH, OR ANY --

10 Q. ALL RIGHT.

11 A. I CAN'T USE THOSE TERMS FOR IT.

12 Q. ALL RIGHT. LET'S HAVE THE NEXT ONE.

13 MR. CONNORS: THAT IS ALL.

14 BY MR. DUBUC:

15 Q. DOCTOR, I THINK YOU MENTIONED IN CLOSING TO MR.  
16 MC MANUS' QUESTIONS SOMETHING ABOUT YOUR EXPERIENCE IN  
17 THAILAND, AND I THOUGHT I HEARD YOU MENTION SOMETHING ABOUT  
18 HAVING OBSERVE THEM BURN OFF RICE PADDIES; IS THAT RIGHT?

19 A. YES, SIR. THAT IS CORRECT.

20 Q. WHAT DID YOU MEAN BY THAT?

21 A. IT IS COMMON PRACTICE IN VARIOUS PARTS OF THE  
22 WORLD, INCLUDING THAILAND, FOR THE RICE-GROWERS TO BURN  
23 THE RICE STUBBLE LEFT FROM THE PREVIOUS CROP AS A MEANS  
24 OF INCREASING SOIL FERTILITY.

25 Q. AND WHAT DOES THE GROUND LOOK LIKE AFTER THEY

1 DO THAT?

2 A. IT'S BLACK.

3 Q. AND THEN AFTER THEY BURN IT OFF, DO THEY REPLANT?

4 A. AS A RULE, YES.

5 Q. AND AFTER IT IS REPLANTED AND IT BEGINS TO GROW,  
6 IS IT IMMEDIATELY ALL GREEN, OR DO YOU HAVE SOME PERIOD  
7 OF TIME WHEN YOU HAVE SOME OF THE OLD STUBBLE AND SOME  
8 OF THE GREEN?

9 A. GENERALLY, WHAT HAPPENS IS THAT THE PATTERN OF  
10 BLACK IS MASKED BY THE FLOODING OF THE FIELD. SO YOU  
11 GO FROM A BLACK FIELD TO ONE FLOODED BY WATER, AND THEN  
12 EVENTUALLY THE RICE STALKS BEGIN TO EMERGE AND TAKE OVER,  
13 AND IT TURNS GREEN.

14 Q. NOW, YOU MENTIONED IRRIGATION AND DRAINAGE. IS  
15 THE PROBLEM IN THAILAND ALSO DRAINAGE WITH RESPECT TO THE  
16 FIELDS YOU HAVE OBSERVED?

17 A. NO, SIR. IT IS ONE OF IRRIGATION.

18 Q. THEY HAVE TO IRRIGATE?

19 A. THEY HAVE TO IRRIGATE, YES, SIR.

20 Q. SO THEY HAVE A PROBLEM OF GETTING WATER TO THE  
21 RICE; IS THAT CORRECT?

22 A. THAT IS CORRECT.

23 Q. AS OPPOSED TO, AS I UNDERSTAND YOUR OPINION,  
24 IN VIETNAM, THE PROBLEM IS THAT THEY HAD TOO MUCH WATER?

25 A. YES.

1 Q. AND THEY HAD TO TAKE SOME OUT?

2 A. IT IS A MATTER OF RELATIVITY. WHEN YOU SAY IT  
3 IS A PROBLEM OF GETTING WATER TO THE CROPS IN THAILAND,  
4 IT IS A MATTER OF ENGINEERING THE WATER.

5 IT IS THERE IN GREAT ABUNDANCE, BUT ONE HAS TO ENGINEER  
6 IT TO GET IT TO THE RIGHT SPOT.

7 Q. OKAY.

8 DOCTOR, HAVE YOU EVER SEEN A FIELD THAT HAS HAD TOO  
9 MUCH WATER AFTER IT IS DRAINED, AND WHAT COLORS YOU SEE  
10 AND WHAT THE VEGETATION LOOKS LIKE, AFTER THE SUN HAS BAKED  
11 IT FOR A WHILE?

12 A. TOO MUCH WATER IN THIS PART OF THE WORLD, SIR?

13 Q. WELL, I UNDERSTAND YOU HAVE NEVER BEEN TO VIETNAM.  
14 I AM WONDERING IF YOU HAVE SEEN IT ANY PLACE ELSE?

15 A. WELL, I HAVE BEEN TO THAILAND, AND I AM NOT SURE  
16 THAT I -- I DON'T MEAN TO EVADE YOUR QUESTION, SIR. IT  
17 IS JUST THAT I AM NOT SURE THAT IT IS POSSIBLE TO HAVE  
18 TOO MUCH WATER IN THAILAND OR VIETNAM.

19 Q. ALL RIGHT.

20 A. DURING THE RICE-GROWING PERIOD.

21 DURING THE HARVESTING PERIOD, IT IS POSSIBLE TO HAVE  
22 TOO MUCH WATER.

23 MR. MC MANUS: MAY WE APPROACH THE BENCH, YOUR  
24 HONOR?

25 THE COURT: YES, INDEED.

1 ( AT THE BENCH )

2 MR. MC MANUS: I WOULD JUST LIKE A REVISED ESTIMATE  
3 FROM MR. DUBUC AS TO WHEN HE WILL BE FINISHED.

4 MR. DUBUC: ABOUT FIVE MINUTES.

5 THE COURT: HE TOLD US 45 MINUTES ABOUT TWO HOURS  
6 AGO.

7 MR. MC MANUS: YES, YOUR HONOR.

8 THE COURT: IT IS NOW 3:35.

9 MR. DUBUC: IT HAS BEEN 15 MINUTES.

10 THE COURT: IT HAS BEEN ABOUT HALF AN HOUR EXTRA.  
11 YOU HAVE YOUR TIME. I WAS JUST CHECKING.

12 MR. DUBUC: WE HAVE HAD SO MANY BENCH CONFERENCES,  
13 YOUR HONOR. I JUST HAVE FIVE MORE MINUTES.

14 MR. MC MANUS: YOUR HONOR, ARE WE GOING TO BE  
15 GOING UNTIL 5:30 THIS EVENING, OR 5:00 O'CLOCK?

16 THE COURT: WE WILL GO TO 5:00 O'CLOCK.

17 MR. MC MANUS: THANK YOU, YOUR HONOR, BECAUSE  
18 WE DO HAVE THE DOCTOR.

19 THE COURT: ALL RIGHT.

20 ( OPEN COURT )

21 BY MR. DUBUC:

22 Q. SIR, BASED ON YOUR EXPERIENCE, DO YOU KNOW OF  
23 ANY MECHANISM -- FOR WANT OF A BETTER WORD, "MECHANISM";  
24 I DON'T KNOW IF THAT IS PROPER FOR PLANTS OR NOT -- BUT  
25 MECHANISM WHICH WOULD LEAVE PARTS OF AREAS GREEN AND PARTS

1 OF AREAS DIFFERENT COLORS, AS WE SEE HERE, FOR EXAMPLE?

2 A. IN GENERAL TERMS, I CAN THINK OF A COUPLE OF  
3 MECHANISMS, AS YOU PUT IT.

4 Q. ALL RIGHT.

5 A. BUT NEITHER OF WHICH ARE APPROPRIATE FOR THIS  
6 PARTICULAR PICTURE. BUT THOSE MECHANISMS ARE, NO. 1,  
7 IF --

8 Q. WELL, YOU SAY THEY ARE NOT APPROPRIATE FOR THIS  
9 PICTURE?

10 A. NO, BECAUSE ONE OF THEM HAS TO DO WITH DESERT  
11 ENVIRONMENTS, WHICH THIS IS NOT.

12 Q. I SEE.

13 A. AND THE OTHER MECHANISM HAS TO DO WITH -- AND  
14 THIS IS PERHAPS WHAT YOU WERE GETTING AT -- TOO MUCH WATER.  
15 BUT TOO MUCH WATER WILL LEAD TO A YELLOWING OF THE VEGETATION.  
16 IT DOES NOT TURN IT BROWN. IT TURNS IT YELLOW.

17 AND, FURTHERMORE, IN THAT PARTICULAR PICTURE, WE ARE  
18 OBVIOUSLY NOT LOOKING AT RICE; NOR ANY OTHER CULTIVATED  
19 CROP; BUT, RATHER, A NATURAL VEGETATION TYPE.

20 IT IS AN AXIOM OF ECOLOGY THAT IF THE PLANTS COULDN'T  
21 STAND THAT MUCH WATER, THEY WOULDN'T BE THERE, TO BEGIN  
22 WITH.

23 SO IT IS NOT A MECHANISM OF TOO MUCH WATER THAT HAS  
24 DONE DAMAGE TO THOSE PLANTS.

25 Q. ALL RIGHT, SIR.

1 A. NOR IS IT TOO LITTLE.

2 Q. SIR, YOU HYPOTHESIZED, IN ANSWER TO ONE OF MR.  
3 MC MANUS' QUESTIONS THIS MORNING, SOMETHING ABOUT FIRE  
4 IN THIS AREA?

5 A. YES, SIR.

6 Q. WOULD IT BE A FAIR STATEMENT THAT YOUR PARTICULAR  
7 EXPERTISE DOES NOT EXTEND TO THE MECHANISM BY WHICH, SAY,  
8 CHLOROPHYLL IS WITHDRAWN FROM PLANTS BY HEAT, WHICH IS  
9 IN THIS CASE FIRE?

10 A. I AM HESITATING BECAUSE OF THE PHRASEOLOGY OF  
11 THE QUESTION, SIR.

12 I AM NOT A PLANT PHYSIOLOGIST. THE CHEMICAL MECHANISMS  
13 THAT ARE INVOLVED IN SUCH A TRANSFORMATION ARE BEYOND MY  
14 EXPERTISE.

15 THE DETERMINATIONS THAT I HAVE REACHED COME FROM THE  
16 PHYSICAL EVIDENCE, AS REVEALED ON THE GROUND BY THE PHOTOGRAPHS.  
17 SIR.

18 Q. ALL RIGHT.

19 A. IT IS NOT THE CHEMISTRY INVOLVED IN THE PROCESS.

20 Q. YOU ARE TALKING ABOUT THE -- YOUR OPINION, WHICH,  
21 AS I UNDERSTOOD IT, WAS BASED ON AN INTERPRETATION OF DISCOLORA-  
22 TION; IS THAT CORRECT?

23 A. THAT IS CORRECT.

24 Q. AND, SIR, AS OF NOVEMBER 24, 1981, WHEN YOUR  
25 DEPOSITION WAS TAKEN, YOU WERE NOT ABLE TO STATE A CAUSE

1 FOR THAT DISCOLORATION; IS THAT CORRECT?

2 A. THAT IS CORRECT.

3 Q. SO YOU HAVE FORMED THAT OPINION SINCE YOUR DEPOSITION  
4 WAS TAKEN IN NOVEMBER?

5 A. WELL, I FORMED THAT OPINION AT THE TIME THAT  
6 I DID THE DELINEATIONS ON PLAINTIFFS' EXHIBIT 3-E. AGAIN,  
7 BASED ON THE COLORS THAT I OBSERVED ON THE PHOTOGRAPH,  
8 THAT WAS THE ONLY REASONABLE CONCLUSION I COULD COME TO:  
9 THAT THERE HAD BEEN A FIRE.

10 Q. NOW --

11 A. BUT I AM NOT ABLE TO STATE THE CAUSE OF THE LOSS  
12 OF CHLOROPHYLL IN CHEMICAL TERMS.

13 Q. I SEE.

14 YOU MENTIONED 3-E. 3-E IS AN EXHIBIT YOU USED IN  
15 YOUR REPORT; DID YOU NOT?

16 A. THAT IS CORRECT. I DIDN'T ACTUALLY USE IT IN  
17 THE REPORT. I HAVE AN OVERLAY, A PLASTIC OVERLAY.

18 Q. I THINK YOU REFERRED TO IT. THAT WAS ONE OF  
19 THE OVERLAYS THAT YOU MADE; IS THAT CORRECT?

20 A. YES, SIR, THAT IS CORRECT.

21 Q. AND YOUR REPORT HAD BEEN COMPLETED WITH 3-E AVAILABLE  
22 BEFORE YOUR DEPOSITION WAS TAKEN; IS THAT CORRECT?

23 A. YES, THAT IS CORRECT.

24 MR. DUBUC: I HAVE NO FURTHER QUESTIONS, YOUR  
25 HONOR.

1 THE COURT: WE WILL ADJOURN AT THIS TIME AND  
2 TAKE A BRIEF RECESS. WE WILL RECONVENE AT TEN MINUTES  
3 OF 4:00, LADIES AND GENTLEMEN.

4 (THE JURY WAS TAKEN OUT OF THE COURTROOM, AND  
5 THE FOLLOWING PROCEEDINGS WERE HAD WITHOUT THE PRESENCE  
6 AND HEARING OF THE JURY:)

7 THE COURT: WE WILL CONTINUE UNTIL 5:00 O'CLOCK.  
8 I HAVE ANOTHER MATTER, BUT I AM JUST GOING TO LET THEM  
9 WATCH THIS FOR A WHILE AND THEN TALK TO THEM.

10 (WHEREUPON, A BRIEF RECESS WAS TAKEN, AFTER WHICH  
11 THE FOLLOWING PROCEEDINGS WERE HAD WITHOUT THE PRESENCE  
12 AND HEARING OF THE JURY:)

13 MR. DUBUC: YOUR HONOR, THAT DELIVERY WAS TO  
14 ME; NOT TO YOUR HONOR.

15 THE COURT: WELL, YOU GOT IT.

16 MR. DUBUC: I JUST WANTED YOUR HONOR TO KNOW  
17 THAT IT WAS NOT DELIVERED THERE -

18 THE COURT: IF YOU WANT TO PUT IT IN THE RECORD,  
19 THAT IS FINE.

20 MR. DUBUC: NO. IT WAS SUPPOSED TO BE DELIVERED  
21 TO ME, AND IT WENT TO YOUR CHAMBERS INSTEAD. I APOLOGIZE  
22 FOR THAT.

23 THE COURT: THAT IS ALL RIGHT. I THOUGHT MAYBE  
24 IT WAS DELIVERED TO ME. DOES IT HAVE MY NAME ON IT?

25 MR. DUBUC: NO. IT HAS YOUR CHAMBERS ON IT.

1 THE COURT: I SEE.

2 MR. DUBUC: UNFORTUNATELY, THEY MUST THINK WE  
3 ARE TRYING THIS IN CHAMBERS.

4 THE COURT: ALL RIGHT. BRING BACK THE JURY.

5 (THE JURY WAS BROUGHT INTO THE COURTROOM, AND  
6 THE FOLLOWING PROCEEDINGS WERE HAD WITHIN THE PRESENCE  
7 AND HEARING OF THE JURY:)

8 THE COURT: MR. PIPER, DID YOU CARE TO INQUIRE?

9 MR. PIPER: NO, YOUR HONOR, NOT THIS WITNESS.

10 THE COURT: ALL RIGHT. MR. MC MANUS.

11 MR. MC MANUS: THANK YOU, SIR.

12 REDIRECT EXAMINATION

13 BY MR. MC MANUS:

14 Q. DR. MORAIN, I HAVE JUST A FEW QUESTIONS FOR YOU,  
15 SIR.

16 MR. DUBUC STARTED TO ASK YOU A QUESTION ABOUT USING  
17 4.02 FEET AS THE DIAMETER FOR YOUR TIRE MEASUREMENT, AND  
18 I BELIEVE YOU STARTED TO SAY THAT THAT WASN'T A GOOD ASSUMPTION.  
19 WHY IS THAT, SIR?

20 A. WE.., THE EVIDENCE -- OR THE APPEARANCE OF THAT  
21 PARTICULAR TIRE THAT I USED FOR MY MEASUREMENTS, THE APPEARANCE  
22 OF THAT TIRE ON THE PHOTOGRAPH, IS THAT IT IS DEFLATED,  
23 AND NOT INFLATED.

24 AND I SAY THAT BY COMPARISON TO THE APPEARANCE OF  
25 OTHER TIRES IN OTHER PHOTOGRAPHS THAT DO APPEAR TO BE

1 INFLATED.

2 SO THE MEASUREMENT OF 4.02 IN THE INFLATED STAGE,  
3 OR CONDITION, I WOULD ASSUME, IS GREATER THAN THE SAME  
4 TIRE DIMENSION WHEN IT IS DEFLATED.

5 AND FOR THAT REASON I DON'T BELIEVE THERE IS ANY SIGNIFICANT  
6 DIFFERENCE BETWEEN THE ACTUAL SIZE OF THAT TIRE AND THE  
7 DIMENSION THAT I USED.

8 Q. THANK YOU, SIR.

9 NOW, DEFENDANTS' EXHIBITS 1216 AND 1217, DO YOU RECALL  
10 THOSE, SIR?

11 A. YES, SIR.

12 Q. DO YOU REMEMBER WHO PRODUCED THESE EXHIBITS?

13 A. I BELIEVE THEY ARE LOCKHEED DIAGRAMS.

14 Q. LOCKHEED, THE DEFENDANT IN THIS CASE?

15 A. YES, SIR.

16 Q. NOW, WE HAVE HEARD THE NAME OF MR. EDWARDS SPOKEN  
17 HERE TODAY.

18 DO YOU KNOW WHO MR. EDWARDS IS, SIR?

19 A. I HAVE NEVER MET HIM, BUT THE COPY OF THE MEMO  
20 THAT I HAVE, AND WHICH WE HAVE REFERRED TO TODAY, IS ON  
21 LOCKHEED LETTERHEAD, AND IT IS SIGNED BY MR. EDWARDS, AS  
22 CHIEF PROJECT ENGINEER.

23 SO I ASSUME THAT HE IS AN ENGINEER, WHO IS WORKING  
24 FOR LOCKHEED.

25 Q. NOW, DO YOU RECALL, SIR, SEEING SOME BLACK-AND-WHITE

1 SLIDES THAT MR. DUBUC SHOWED YOU, THE ENHANCED SLIDES?

2 A. OH, YES, SIR.

3 Q. ALL RIGHT.

4 DO YOU REMEMBER, SIR, THAT ONE SLIDE THAT HAD THE  
5 GRIDS A, B, C, D, E, AND SO FORTH, ON IT?

6 A. YES, SIR.

7 Q. DID YOU SEE ANY WATER ANYWHERE ON THAT SLIDE,  
8 SIR?

9 A. ONLY ON THE SLIDE THAT SHOWED THE TROOP COMPARTMENT,  
10 AND THE MAJOR TRACKS THAT EXTENDED EASTWARD.

11 BUT THE ENLARGEMENTS A, B, C, AND E, IF I RECALL,  
12 DON'T SHOW ANY EVIDENCE OF WATER.

13 Q. AND DO YOU RECALL THE LAST SERIES OF COLOR SLIDES  
14 THAT YOU SAW THAT FOCUSED ON THE TROOP COMPARTMENT, SIR?

15 A. OH, YES.

16 Q. DO YOU KNOW WHEN THOSE SLIDES WERE TAKEN?

17 A. NO, SIR, I DON'T.

18 Q. DO YOU KNOW WHO TOOK THOSE SLIDES?

19 A. NO, SIR, I DON'T.

20 Q. THANK YOU, SIR.

21 MR. MC MANUS: I HAVE NO FURTHER QUESTIONS,  
22 YOUR HONOR.

23 THE COURT: ANY RECROSS?

24 MR. DUBUC: NO QUESTIONS, YOUR HONOR. THANK  
25 YOU.

1 THE COURT: YOU MAY STEP DOWN, DOCTOR. THANK YOU.  
2 THE NEXT WITNESS, PLEASE?

3 (WITNESS EXCUSED)

4 MR. DUBUC: YOUR HONOR, JUST BEFORE WE GO TO THE NEXT  
5 WITNESS --

6 THE COURT: YES, MR. DUBUC:

7 MR. DUBUC: (CONTINUING) --SINCE WE HAVE HAD  
8 REFERENCE TO SOME OTHER EXHIBITS HERE WHICH ORIGINALLY  
9 WERE PLAINTIFFS' EXHIBITS, AND WE HAD SOME NUMBERING PROBLEMS  
10 BEFORE, I WOULD LIKE TO -- AND THESE HAVE NOT BEEN OFFERED  
11 BY THE PLAINTIFFS.

12 BUT WE HAVE REFERRED TO THEM WITH MR. MORAIN,  
13 AS PART OF HIS REPORTS.

14 THE COURT: THEY HAVE BEEN IDENTIFIED; HAVEN'T  
15 THEY?

16 MR. DUBUC: THEY HAVE BEEN IDENTIFIED. THESE  
17 ARE NOT THE ONES WE SPECIFICALLY USED.

18 THESE ARE THE ONES THAT HE HAD USED, AND WE CROSS-  
19 EXAMINED HIM ON.

20 BUT, JUST SO THE RECORD IS CLEAR, I WOULD LIKE  
21 TO OFFER IN EVIDENCE PLAINTIFFS' EXHIBIT 1000-110, THE  
22 FIVE-BY-SEVEN BLACK-AND-WHITE THAT WE WORKED ON, WHICH  
23 DOES CARRY A DEFENDANTS' D-1354 NUMBER, AS WELL.

24 THE COURT: IS THERE ANY OBJECTION?

25 MR. MC MANUS: NO OBJECTION, YOUR HONOR.

1 MR. DUBUC: AND PLAINTIFFS' EXHIBIT 1000-88,  
2 WHICH CARRIES A DEFENDANTS' D-1364 NUMBER; PLAINTIFFS'  
3 1000-60, WHICH ALSO CARRIES A DEFENDANTS' 1362 NUMBER;  
4 AND EXHIBIT D-1408, WHICH WAS THE MAP WE SHOWED THE WITNESS.

5 HE WAS USING A PLAINTIFFS' EXHIBIT, BUT HE TOLD  
6 US THE ONE HE USED FOR HIS REPORT DID NOT HAVE SOME OF  
7 THE OTHER LINES ON IT.

8 THAT IS THE ONLY EXHIBIT NUMBER, D-1408.

9 WE WOULD ALSO LIKE TO OFFER PLAINTIFFS' 1000-12(C),  
10 WHICH CARRIES A DEFENDANTS' D-1359 NUMBER, AS WELL; AND  
11 PLAINTIFFS' 5230, WHICH ALSO CARRIES A DEFENDANTS' EXHIBIT  
12 NO. 1384.

13 I WOULD LIKE TO OFFER THOSE IN EVIDENCE.

14 MR. MC MANUS: NO OBJECTION.

15 THE COURT: THEY ARE RECEIVED.

16 (PLAINTIFF'S EXHIBIT 1000-110 [D-1354],  
17 PLAINTIFFS' EXHIBIT 1000-88 [D-1364],  
18 PLAINTIFFS' EXHIBIT 1000-60 [D-1362],  
19 DEFENDANTS' EXHIBIT D-1408, PLAINTIFFS'  
20 EXHIBIT 1000-12(C) [D-1359], AND PLAINTIFFS'  
21 EXHIBIT 5230 [D-1384], WERE RECEIVED IN  
22 EVIDENCE, RESPECTIVELY.)

23 MR. MC MANUS: YOUR HONOR, WE CALL DR. MARIANNE  
24 SCHUELEIN.

25 THE COURT: ALL RIGHT.