

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

DEPARTMENT 3

HON. JACK KOMAR, JUDGE

IN RE

ANTELOPE VALLEY GROUNDWATER CASES.

CASE NO. JCCP4408

CERTIFIED

REPORTER'S TRANSCRIPT OF PROCEEDINGS

TRIAL

FEBRUARY 11, 2014

APPEARANCES:

FOR PLAINTIFF UNITES
STATES OF AMERICA:

U.S. DEPARTMENT OF JUSTICE
ENVIRONMENT & NATURAL
RESOURCES DIVISION
BY: R. LEE LEININGER, ESQ.
JAMES J. DUBOIS, ESQ.

FOR PLAINTIFF RICHARD
WOOD:

LAW OFFICE OF
MICHAEL D. MC LACHLAN
BY: , ESQ.

PHELAN PINON HILLS
COMMUNITY SERVICE

ALESHIRE & WYNDER LLP
BY: WESLEY A. MILIBAND, ESQ.

FOR DEFENDANT BOLTHOUSE
PROPERTIES, LLC:

CLIFFORD & BROWN
BY: RICHARD ZIMMER, ESQ.

FOR DEFENDANT ANTELOPE
VALLEY GROUNDWATER
AGREEMENT ASSOC.:

BROWNSTEIN HYATT
FARBER SCHRECK
BY: MICHAEL T. FIFE, ESQ.
BRADLEY J. HERREMA, ESQ.

FOR CROSS-DEFENDANT
AVEK:

BRUNICK, MC ELHANEY & KENNEDY
BY: WILLIAM J. BRUNICK, ESQ.

FOR DEFENDANT L.A.
COUNTY WATERWORKS
DISTRICT NO. 40:

BEST BEST & KRIEGER
BY: JEFFREY V. DUNN, ESQ.
WENDY Y. WANG, ESQ.

(CONTINUED)

1 **APPEARANCES:**

2 (CONTINUED)

3 FOR DEFENDANT TEJON KUHS & PARKER
4 RANCH: BY: ROBERT G. KUHS, ESQ.
 (VIA COURTCALL)

5 FOR DEFENDANTS CRYSTAL LE BEAU THELEN
6 ORGANICS, DIAMOND BY: ANDREW K. SHEFFIELD, ESQ.
7 FARMING, REMRY FARMS
8 AND LAPIS LAND COMPANY:

9 FOR CROSS-DEFENDANTS GRESHAM SAVAGE
10 A.V. UNITED MUTUALS BY: MICHAEL D. DAVIS, ESQ.
11 GROUP, ADAMS BENNETT DEREK R. HOFFMAN, ESQ.
12 INV., GOLDEN SANDS,
13 SHEEP CREEK WATER CO.,
14 SERVICE ROCK PRODUCTS,
15 ST. ANDREWS ABBEY:

16 FOR STATE OF STATE OF CALIFORNIA
17 CALIFORNIA: DEPARTMENT OF JUSTICE
18 OFFICE OF THE ATTORNEY GENERAL
19 BY: MARILYN H. LEVIN
20 DEPUTY ATTORNEY GENERAL

21 FOR DEFENDANT US BORAX: MORRISON FOERSTER
22 BY: WILLIAM M. SLOAN, ESQ.

23 ALSO PRESENT: U.S. AIR FORCE
24 WESTERN REGION
25 BY: MR. EDWIN OYARZO, ESQ.

26

27

28 REPORTED BY: RHONA S. REDDIX, CSR RPR CRR RMR NO. 10807
 OFFICIAL REPORTER

1	<u>I N D E X</u>				
2	<u>PLAINTIFF'S WITNESSES</u>	<u>DIRECT</u>	<u>CROSS</u>	<u>REDIRECT</u>	<u>RECROSS</u>
3	RICHARD PAUL HALLION JR.	6	38 53	62	
4	MICHAEL THOMAS BREWER	66	114	136	138
5	JAMES EARL JUDKINS	141	192		
6					
7					
8					
9	<u>E X H I B I T S</u>				
10	<u>NUMBER</u>	<u>FOR IDENTIFICATION</u>	<u>IN EVIDENCE</u>		
11	TEJON 1	121	140		
12	TEJON 2	123	140		
13	TEJON 3	197			
14	3	6	64		
15	TEJON 4	201			
16	US 007	68			
17	8	141			
18	126	11	64		
19	168	154			
20	178	172			
21	187	180			
22	194	74	140		
23	196	148			
24	221	117	140		
25	243	85			
26	255		64		
27	260	37	64		
28					

1 CASE NUMBER: JCCP4408
2 CASE NAME: ANTELOPE VALLEY GROUNDWATER
3 LOS ANGELES, CALIFORNIA FEBRUARY 11, 2014
4 DEPARTMENT 1 HON. JACK KOMAR
5 REPORTER: RHONA S. REDDIX, CSR 10807
6 TIME: A.M. SESSIONS
7 APPEARANCES: (SEE TITLE PAGE.)
8
9

10 **THE COURT:** GOOD MORNING.
11

12 (RESPONSES.)
13

14 **THE COURT:** ALL RIGHT. WE'RE GOING TO RESUME WITH
15 THE GOVERNMENT'S CASE. I UNDERSTAND WE HAVE A NUMBER OF
16 PARTIES WHO ARE ON COURTCALL. THEY ARE ON A LISTEN ONLY
17 MODE. IF ANY COUNSEL WISHES TO BE HEARD, THEY HAVE TO
18 BE PRESENT IN THE COURTROOM.

19 ALL RIGHT, MR. LEININGER.

20 **MR. LEININGER:** GOOD MORNING, YOUR HONOR. IS THIS
21 WORKING? IS THAT BETTER? (INDICATING.)

22 **THE COURT:** IT'S ON.

23 **MR. LEININGER:** GOOD MORNING, YOUR HONOR. JUST AS
24 A BOOKKEEPING MATTER FROM YESTERDAY, WE HAD CONCLUDED
25 THE TESTIMONY OF MR. RAND HERBERT.

26 **THE COURT:** YES.

27 **MR. LEININGER:** AND AT THIS TIME I'D LIKE TO MOVE
28 FOR SUBMISSION OF OUR EXHIBITS INTO THE RECORD.

1 **THE COURT:** MR. KUHS?

2 **MR. KUHS:** YEAH. YOUR HONOR, I WENT BACK
3 YESTERDAY AND REVIEWED MR. HERBERT'S DEPOSITION.
4 UNFORTUNATELY, I LEFT IT IN THE HOTEL THIS MORNING; SO
5 MR. FIFE WAS KIND ENOUGH TO GO BACK AND GET IT FOR ME.

6 BUT THE LONG AND SHORT OF IT IS THAT THE
7 MAPS THAT WERE REFERRED TO IN TESTIMONY YOU HEARD
8 YESTERDAY, FROM THE DEPOSITION, ARE MAPS THAT WERE NOT
9 PRODUCED PHYSICALLY. THEY WERE PRODUCED IN ELECTRONIC
10 FORMAT. AND THE WITNESS TESTIFIED THEY WERE DRAFTS, BUT
11 HE DIDN'T HAVE A LOT OF INFORMATION ON THEM AND HE
12 DIDN'T PREPARE THEM, BUT THEY WERE PREPARED BASED UPON
13 DATA FROM THE UNITED STATES IN CONJUNCTION WITH SOMEBODY
14 IN HIS OFFICE, AND HE COULDN'T GIVE MR. JOYCE, WHO WAS
15 DOING THE EXAMINATION, ANY DETAILS.

16 SO WHEN I HAD DIALOGUE WITH MR. LEININGER,
17 THE REPRESENTATION WAS THAT THESE WITNESSES HAVE NOT
18 DONE ANY ADDITIONAL WORK SINCE THEIR LAST DEPOSITION.
19 IF YOU'VE GOT DRAFT EXHIBITS AT YOUR DEPOSITION AND
20 YOU'RE BRINGING A DIFFERENT DOCUMENT TO TRIAL, THAT'S
21 WORK WE'VE NOT SEEN BEFORE. AND SO I RESUME MY
22 OBJECTION. I'M HAPPY TO READ THAT PORTION OF THE
23 TRANSCRIPT IN WHEN IT COMES BACK, IN FAIRNESS TO
24 MR. LEININGER.

25 **THE COURT:** DO YOU WANT TO RESPOND TO THAT,
26 MR. LEININGER?

27 **MR. LEININGER:** YES, YOUR HONOR. I BELIEVE IT IS
28 IMPORTANT THAT WE GET THE ORIGINAL TRANSCRIPT IN HERE

1 FOR PURPOSES OF CLARIFICATION.

2 THERE WAS A SUBMISSION OF A NUMBER OF
3 DOCUMENTS MR. HERBERT BROUGHT TO HIS DECLARATION [SIC].
4 AND, IN FACT, THESE DRAFTS WERE -- WE CAN PROVIDE THE
5 FILE NUMBER. WE CAN PROVIDE THE DISK NUMBER THAT WAS
6 PROVIDED AS A COPY TO MR. KUHS.

7 WITH REGARD TO ANY CHANGES IN HIS
8 DOCUMENTATION, MY UNDERSTANDING, THOSE WERE PREPARED BY
9 OR AT THE DIRECTION OF MR. HERBERT, IN MR. HERBERT'S
10 OFFICE, AND THE CHANGE THAT WAS MADE FROM THE DRAFT TO
11 THE FINAL PRESENTATION WAS MERELY THE BLOCK QUOTATIONS
12 THAT WERE ATTACHED TO THE TOPS OF THE MAPS. THE MAPS
13 THEMSELVES, I UNDERSTAND, HAD NO SIGNIFICANT
14 ALTERATIONS.

15 **THE COURT:** (INDICATING.) WELL, LET'S CUT THIS
16 SHORT. IT SEEMS TO ME THAT THEY ARE EXEMPLARY. I HEARD
17 HIS TESTIMONY. THEY'RE HELPFUL TO THE COURT. THEY
18 DESCRIBE GRAPHICALLY WHAT HE WAS TESTIFYING TO. THEY
19 WERE USEFUL IN GENERALIZED SORT OF WAY.

20 THEY DON'T REALLY ESTABLISH ANY PARTICULAR
21 FACT THAT IS IN DISPUTE; THEREFORE, I'M GOING TO ADMIT
22 THEM. I OVERRULE YOUR OBJECTION. AND I APPRECIATE --

23 **MR. KUHS:** I WAS GOING TO SAY FOR THE RECORD, YOUR
24 HONOR, I HAVE NO OBJECTION TO THEM COMING IN AS
25 DEMONSTRATIVE EVIDENCE, BUT I DIDN'T WANT THEM TO COME
26 IN JUST AS FOR TRUTH AS TO GEOGRAPHICALLY WHERE THESE
27 GRANTS AND RESERVATIONS WERE.

28 **THE COURT:** THAT OBJECTION IS APPROPRIATE AND THAT

1 RESERVATION IS APPROPRIATE. THEY'LL COME IN AS
2 DEMONSTRATIVE EXHIBITS FOR THE REASONS THAT I JUST
3 INDICATED.

4 **MR. KUHS:** THANK YOU, YOUR HONOR.

5 **THE COURT:** THANK YOU, MR. KUHS.

6 ALL RIGHT. LET'S -- MR. ZIMMER.

7 **MR. ZIMMER:** I'LL BE BRIEF, YOUR HONOR. I WOULD
8 RENEW THE OBJECTION I MADE YESTERDAY, WHICH I THINK WAS
9 SUSTAINED, THAT ALL OF THESE EXHIBITS, SHORT OF THE
10 COLEMAN CASE AND THE CONTINENTAL CASE, ARE BEING --
11 CONTAIN HEARSAY. THAT HEARSAY IS NEVERTHELESS
12 INADMISSIBLE HEARSAY. IT IS BEING RELIED UPON BY AN
13 EXPERT WITNESS AS A BASIS FOR THE EXPERT'S OPINION ONLY,
14 AND IT IS ONLY CONSIDERED FOR THAT PURPOSE ONLY. BUT
15 THE TESTIMONY ITSELF IS INADMISSIBLE AND IT WOULD ONLY
16 APPLY AS TO THE SPECIFIC MATTERS DISCUSSED BY THE
17 WITNESS DURING THE TESTIMONY.

18 **THE COURT:** ALL RIGHT. I PREVIOUSLY RULED.

19 ALL RIGHT. MR. LEININGER.

20 **MR. LEININGER:** THANK YOU, YOUR HONOR. UNITED
21 STATES NOW CALLS DR. RICHARD HALLION.

22 **THE COURT:** ALL RIGHT. PLEASE COME FORWARD, SIR.
23 UNFORTUNATELY, WE DO NOT HAVE A DECENT WITNESS BOX FOR
24 YOU TO SIT IN.

25 **THE WITNESS:** THAT'S QUITE ALL RIGHT, YOUR HONOR.
26 I'LL BE HAPPY TO.

27 **THE COURT:** WE'RE SCRUNCHED UP THERE, I'M AFRAID.
28 YOU WOULD SOUND (INAUDIBLE: COUGHING) IF YOU WOULD BE

1 HAPPY.

2 ALL RIGHT. STATE YOUR FULL NAME AND SPELL
3 IT, PLEASE, AND STATE YOUR BUSINESS ADDRESS FOR THE
4 RECORD.

5 **THE WITNESS:** MY NAME IS RICHARD PAUL HALLION,
6 JR., R-I-C-H-A-R-D, P-A-U-L, H-A-L-L-I-O-N, J-R. MY
7 ADDRESS IS 897-V MASTERS BOULEVARD, SHALIMAR, FLORIDA,
8 32579-1665.

9 **THE COURT:** THANK YOU, SIR.

10 **THE CLERK:** (SPOKE SOTTO VOCE.)

11 **THE COURT:** YEAH, LET'S HAVE HIM SWORN.

12 **THE CLERK:** SIR, WOULD YOU PLEASE RAISE YOUR RIGHT
13 HAND.

14 YOU DO SOLEMNLY STATE THAT THE TESTIMONY
15 YOU MAY GIVE IN THE CAUSE NOW PENDING BEFORE THIS COURT
16 SHALL BE THE TRUTH, THE WHOLE TRUTH, AND NOTHING BUT THE
17 TRUTH, SO HELP YOU GOD?

18 **THE WITNESS:** I DO.

19 **THE CLERK:** THANK YOU.

20 **MR. LEININGER:** YOUR HONOR, MAY -- SORRY. MAY
21 MR. OYARZO APPROACH, PLEASE, WITH EXHIBITS?

22 **THE COURT:** YES.

23 **MR. LEININGER:** YOUR HONOR, WE'RE --
24 MR. HALLION'S -- DR. HALLION IS ONLY GOING TO HAVE THREE
25 EXHIBITS. FIRST ONE IS HIS C.V., HIS RESUME; SECOND ONE
26 IS ONE EXHIBIT WHICH CONTAINS A NUMBER OF PHOTOS; AND
27 THE LAST EXHIBIT IS JUST A CHART.

28 **THE COURT:** ALL RIGHT.

1 **MR. LEININGER:** SO THIS SHOULD GO FAIRLY RAPIDLY.
2 AND IF IT'S OKAY -- ARE THEY PREVIOUSLY MARKED?

3 **MR. OYARZO:** (INDICATING.)

4 **MR. LEININGER:** SO THEY'VE BEEN PREVIOUSLY MARKED
5 BY THE COURT. IF IT'S PERMISSIBLE WITH THE COURT, WE'LL
6 JUST ALLOW THE EXHIBITS TO STAY THERE.

7 **THE COURT:** JUST REFER TO THEM BY NUMBER, PLEASE.

8 **MR. LEININGER:** YES.

9

10 **DIRECT EXAMINATION**

11 **BY MR. LEININGER:**

12 **Q** SO WE'LL BEGIN WITH EXHIBIT NUMBER 3.
13 DR. HALLION, CAN YOU TURN TO NUMBER 3, PLEASE?

14 **A** YES. THANK YOU.

15 **Q** AND THE BATES NUMBER ON THE FIRST PAGE OF
16 EXHIBIT NUMBER 3 IS U.S.A.F. 042201. ARE YOU FAMILIAR
17 WITH THIS DOCUMENT?

18 **A** YES, I AM.

19 **Q** AND DID YOU PREPARE IT OR HELP PREPARE IT?

20 **A** YES, I DID.

21 **Q** DOES IT REFLECT YOUR TRAINING AND
22 EXPERIENCE?

23 **A** YES, IT DOES.

24 **Q** IS IT UP TO DATE?

25 **A** YES, IT IS.

26

27 (EXHIBIT 3, IDENTIFIED: DR.

28 HALLION'S C.V., RESUME.)

1
2 **BY MR. LEININGER:**

3 **Q** OKAY. SO LET'S START WITH YOUR EDUCATIONAL
4 BACKGROUND, IF YOU'D JUST BRIEFLY DISCUSS THAT.

5 **A** I RECEIVED MY BACHELOR'S IN HISTORY FROM
6 THE UNIVERSITY OF MARYLAND IN 1970. THE FIELD I DID MY
7 MAJOR WORK IN WAS AMERICAN HISTORY, WITH A MINOR IN THE
8 HISTORY OF TECHNOLOGY AND A SPECIALTY AREA IN AEROSPACE
9 HISTORY.

10 I THEN RECEIVED MY DOCTORATE FROM THE SAME
11 UNIVERSITY, THE UNIVERSITY OF MARYLAND, 1975, AND MY
12 DISSERTATION WAS AGAIN IN THE FIELD OF AEROSPACE
13 HISTORY.

14 I HAVE ALSO, AS A FEDERAL WORKER, ATTENDED
15 A LEADERSHIP PROGRAM WITH THE FEDERAL EXECUTIVE
16 INSTITUTE. GRADUATED FROM THAT IN 1992. AND I
17 GRADUATED FROM THE NATIONAL SECURITY STUDIES PROGRAM OF
18 THE JOHN F. KENNEDY SCHOOL OF GOVERNMENT AT HARVARD
19 UNIVERSITY IN 1993.

20 **Q** AND JUST BRIEFLY CAN YOU DESCRIBE YOUR
21 MAJOR PROFESSIONAL AFFILIATIONS?

22 **A** MY MAJOR PROFESSIONAL AFFILIATIONS ARE I AM
23 A FELLOW OF THE AMERICAN INSTITUTE OF AERONAUTICS AND
24 ASTRONAUTICS. I AM A FELLOW OF THE ROYAL AERONAUTICAL
25 SOCIETY AND A FELLOW OF THE ROYAL HISTORICAL SOCIETY.

26 I AM A MEMBER OF A COMMITTEE IN AIRPOWER
27 EXCELLENCE, WORKING FOR THE MITCHELL INSTITUTE OF THE
28 AIR FORCE ASSOCIATION. AND I AM CURRENTLY A SENIOR

1 CONSULTANT TO THE SCIENCE AND TECHNOLOGY POLICY
2 INSTITUTE OF THE INSTITUTE FOR DEFENSE ANALYSIS IN
3 WASHINGTON, D.C.

4 Q LET'S SHIFT TO YOUR EXPERIENCE AS A
5 HISTORIAN, PARTICULARLY FOR THE AIR FORCE. CAN YOU
6 BRIEFLY DESCRIBE YOUR EXPERIENCE OR GIVE A SYNOPSIS OF
7 YOUR EXPERIENCE AS A MILITARY HISTORIAN?

8 A I BEGAN MY CAREER AS A CURATOR AT THE
9 SMITHSONIAN INSTITUTION. THAT BROUGHT ME INTO CONTACT
10 WITH THE UNITED STATES AIR FORCE. AND IN 1982 I JOINED
11 THE PROFESSIONAL STAFF OF THE UNITED STATES AIR FORCE AS
12 THE HISTORIAN AT THE AIR FORCE FLIGHT TEST CENTER AT
13 EDWARDS AIR FORCE BASE, CALIFORNIA, NOW CALLED THE AIR
14 FORCE TEST CENTER.

15 I HELD A SERIES OF POSITIONS IN THE AIR
16 FORCE IN THE HISTORICAL CAPACITY FROM THAT POINT
17 ONWARDS. I SERVED AS A SENIOR STAFF MEMBER OF THE
18 SECRETARIAL'S EXECUTIVE -- SECRETARY'S EXECUTIVE STAFF
19 FOR SECRETARY DONALD RICE. AND THEN IN 1991 I BECAME
20 THE CHIEF HISTORIAN OF THE UNITED STATES AIR FORCE. I
21 HELD THAT POSITION TILL THE YEAR 2002.

22 AFTER THAT, I SWITCHED INTO THE DIRECTOR OF
23 SECURITY, COUNTERINTELLIGENCE AND SPECIAL PROGRAMS
24 OVERSIGHT. AND I FINISHED MY AIR FORCE CAREER AS SENIOR
25 ADVISER FOR AEROSPACE ISSUES, WITHIN THE DIRECTOR OF
26 SECURITY, COUNTERINTELLIGENCE AND SPECIAL PROGRAMS
27 OVERSIGHT.

28 Q SO IT SOUNDS LIKE YOU HAVE EXPERIENCE

1 DIRECTLY AT EDWARDS AIR FORCE BASE. IS THAT WHAT I
2 UNDERSTOOD?

3 **A** YES. I FIRST WENT TO EDWARDS AIR FORCE
4 BASE IN APRIL OF 1976 ON A JOINT, INTERAGENCY STUDY
5 EFFORT BETWEEN THE SMITHSONIAN AND THE NATIONAL
6 AERONAUTICS AND SPACE ADMINISTRATION TO TRACE THE
7 HISTORY OF THE DRYDEN FLIGHT RESEARCH CENTER.

8 WHEN I WENT OUT AS AN AIR FORCE STAFF
9 MEMBER IN 1992, JANUARY OF 1992, I WAS PERMANENTLY
10 STATIONED AT EDWARDS FROM THAT TIME UNTIL MAY OF 1986.

11 AFTERWARDS, IN A VARIETY OF CAPACITIES,
12 WORKING WITH AIR FORCE SYSTEMS COMMAND, I MAINTAINED A
13 ROUTINE AND STEADY CONTACT WITH THE TEST FORCES OF
14 EDWARDS, PARTICULARLY THE B-2 TEST FORCE, AND SOME
15 OTHERS IN CLASSIFIED NATURE, AND THEN CONTINUED THAT
16 BASICALLY THROUGH THE REST OF MY AIR FORCE CAREER.

17 **Q** DO YOU HAVE ANY PUBLICATIONS RELATED
18 DIRECTLY TO EDWARDS AIR FORCE BASE?

19 **A** YES, I DO. I HAVE A BOOK THAT WAS
20 PUBLISHED IN 1984 BY THE GOVERNMENT PRINTING OFFICE,
21 CALLED *ON THE FRONTIER*. IT IS A HISTORY OF FLIGHT
22 TESTING AND FLIGHT RESEARCH AT THE DRYDEN CENTER FROM
23 1946 THROUGH 1981.

24 I HAD PUBLISHED ARTICLES ON EDWARDS AIR
25 FORCE BASE, TRACING ITS DEVELOPMENT THROUGH THE 1980S.
26 AND I PUBLISHED A BOOK ON FLIGHT RESEARCH THROUGH THE
27 PERSPECTIVE OF THE TEST PILOT, A BOOK CALLED *SIMPLY TEST*
28 *PILOTS*, THAT -- IN WHICH I WAS FIGURED PROMINENTLY.

1 CURRENTLY, I'M WORKING WITH THE NATIONAL
2 AERONAUTICS AND SPACE ADMINISTRATION AS AN EDITOR ON A
3 SERIES OF BOOKS TRACING FLIGHT RESEARCH PROJECTS
4 CONDUCTED AT EDWARDS INTO THE LATE 1990S AND EARLY 2000
5 TIME PERIOD.

6 **MR. LEININGER:** AT THIS TIME, YOUR HONOR, THE
7 UNITED STATES PROFFERS DR. HALLION AS AN EXPERT IN
8 MILITARY HISTORY, SPECIFICALLY MILITARY AERONAUTICAL
9 HISTORY.

10 **THE COURT:** IN PARTICULAR WITH REGARD TO EDWARDS
11 AIR FORCE BASE?

12 **MR. LEININGER:** YES.

13 **THE COURT:** IS THERE ANY VOIR DIRE OF THE WITNESS?

14 **MR. ZIMMER:** NO, YOUR HONOR.

15 **THE COURT:** ANY OBJECTION?

16 **MR. LEININGER:** YOUR HONOR, I APOLOGIZE. AND
17 PLANT 42. HE WILL BE OPINING ON HISTORY OF PLANT 42.

18 **THE COURT:** ALL RIGHT. AND THE COURT FINDS THE
19 WITNESS IS QUALIFIED. HE MAY SO TESTIFY.

20 **BY MR. LEININGER:**

21 **Q** SO BASED ON YOUR EXPERIENCE AND YOUR
22 HISTORICAL INVESTIGATIONS -- LET'S JUST START WITH AN
23 OVERVIEW. LOOKING AT THE HISTORY OF EDWARDS AIR FORCE
24 BASE, HOW DO YOU DESCRIBE ITS CHANGE AND -- ITS CHANGE
25 IN MISSION AT THE TIME, IN A SYNOPSIS?

26 **MR. KUHS:** OBJECTION, VAGUE AS TO THE DEFINITION
27 OF "MISSION."

28 **THE COURT:** WHY DON'T YOU REPHRASE THAT, PLEASE.

1 **BY MR. LEININGER:**

2 **Q** HOW DO YOU SUMMARIZE ACTIVITIES THROUGH
3 HISTORY, BEGINNING WITH THE EARLY YEARS OF EDWARDS AIR
4 FORCE BASE THROUGH THE PRESENT?

5 **A** WHAT I FIND ABOUT THE HISTORY OF EDWARDS
6 AIR FORCE BASE IS A REMARKABLE CONSTANCY. THERE HAS
7 BEEN A EVOLUTION OF THE CENTER SINCE ITS FOUNDING IN THE
8 1930S. BUT OVER THAT TIME, WE FIND THAT THERE HAVE BEEN
9 A NUMBER OF ACTIVITIES, TESTING, TRAINING, OPERATIONAL
10 DEPLOYMENTS, RESEARCH, DEVELOPMENT, TESTING, EVALUATION,
11 THAT HAVE REMAINED RELATIVELY CONSTANT OVER TIME IN
12 TERMS OF THE THRUST OF THE CENTER'S ACTIVITY.

13 AS THE AIR FORCE HAS GROWN IN CAPABILITIES,
14 IT HAS FOUND THAT IT HAS NEEDED EDWARDS TO BE THE CENTER
15 FOR THOSE CAPABILITIES TO BE EXPLORED. THAT HAS BEEN
16 TRUE FOR AMERICAN AEROSPACE IN GENERAL AS WELL. FOR
17 EXAMPLE, IF WE LOOK AT THE SPACE SHUTTLE, THERE WAS
18 REALLY NO OTHER PLACE TO REALLY DO THE INITIAL APPROACH
19 AND LANDING TEST OTHER THAN EDWARDS AIR FORCE BASE. SO
20 WE HAVE SEEN THAT CONSTANT PATTERN OVER TIME.

21 **Q** LET'S TURN NOW TO EXHIBIT 125. AND
22 EXHIBIT 125 IS A SERIES OF PHOTOGRAPHS; IS THAT CORRECT?

23 **A** YES, IT IS.

24
25 (EXHIBIT 126, IDENTIFIED:
26 PHOTOGRAPHS.)
27
28

1 **BY MR. LEININGER:**

2 **Q** SO LET'S BEGIN WITH BATES LABEL NUMBER --

3 **MR. LEININGER:** CAN YOU ENLARGE THAT?

4 **TECHNICAL ASSISTANT:** (INDICATING.)

5 **BY MR. LEININGER:**

6 **Q** -- U.S.A.F. 044004. YOU DESCRIBE THIS --
7 FIRST OF ALL, LET'S TALK BRIEFLY ABOUT THE SOURCE OF
8 THIS AND OTHER INFORMATION, PLEASE.

9 **A** THIS PHOTOGRAPH AND THE OTHER PHOTOGRAPHS
10 I'M SHOWING COME FROM THE COLLECTIONS OF THE NATIONAL
11 MUSEUM OF THE UNITED STATES AIR FORCE AND ALSO FROM THE
12 COLLECTIONS OF THE EDWARDS AIR FORCE BASE HISTORY OFFICE
13 AND THE DRYDEN FLIGHT RESEARCH CENTER AT EDWARDS
14 CALIFORNIA.

15 **MR. KUHS:** YOUR HONOR, AS I UNDERSTAND IT, WE'RE
16 GOING TO GO THROUGH A SERIES OF PHOTOGRAPHS OF
17 AIRPLANES. I'D LIKE AN OFFER OF PROOF AS TO DEVELOPMENT
18 OF THOSE PICTURES. I THINK IT'S INTERESTING FROM A
19 HISTORICAL STANDPOINT, BUT I'M NOT SURE THERE'S ANY
20 LEGAL ISSUE INDICATED.

21 **THE COURT:** WELL, I'M GOING TO GIVE HIM SOME
22 LEEWAY IN SHOWING THESE VERY INTERESTING PHOTOGRAPHS.

23 **MR. KUHS:** UNDERSTAND.

24 **THE COURT:** THANK YOU.

25 **BY MR. LEININGER:**

26 **Q** WHAT DOES THIS FIRST PHOTOGRAPH SHOW?

27 **A** THIS FIRST PHOTOGRAPH IS OF AN EARLY
28 MONOPLANE FIGHTER, ALL METAL AIRCRAFT, TESTED BY THE

1 ARMY AIR CORPS IN THE EARLY 1930S AND THEN PLACED INTO
2 OPERATIONAL SERVICE.

3 IT'S A EXAMPLE OF IN-BETWEEN TECHNOLOGY.
4 WE HAVE SOME OF THE ATTRIBUTES OF MODERN TECHNOLOGY. WE
5 HAVE AN ALL METAL STRUCTURE, SINGLE WING, BUT WE HAVE
6 SOME OF THE ATTRIBUTES OF OLDER TECHNOLOGY OF THE
7 BIPLANE ERA, OPEN COCKPITS, FIXED LANDING GEAR --

8 Q DR. HALLION, I'M SORRY. I DON'T MEAN TO
9 INTERRUPT. BUT RATHER THAN DISCUSSING THE TECHNOLOGY OF
10 THE PLANE ITSELF, WHERE IS THIS PICTURE TAKEN?

11 A THIS PICTURE IS TAKEN OVER MUROC DRY LAKE,
12 CALIFORNIA, IN APPROXIMATELY THE 1934 TIME PERIOD. AND
13 THE REASON THIS IS SIGNIFICANT IS BECAUSE THE TECHNOLOGY
14 OF THE AIRCRAFT OF THAT DAY DEMANDED NEW AND GREATER
15 SPACES IN WHICH THESE AIRCRAFT COULD BE EVALUATED, IN
16 WHICH PILOTS COULD LEARN TO USE THEM MOST EFFECTIVELY,
17 IN WHICH PILOTS COULD TRAIN.

18 MARCH FIELD AT THIS TIME HAD A VERY
19 FARSEEING COMMANDER, COLONEL HENRY H., HAP, ARNOLD, WHO
20 LATER BECAME THE CHIEF OF STAFF OF THE ARMY AIR FORCES
21 IN WORLD WAR II. AND ARNOLD REALIZED THAT IF HE WAS TO
22 PREPARE THE NATION FOR FUTURE WAR, HE NEEDED TO HAVE A
23 LARGE, OPEN TRAINING AREA, RELATIVELY REMOTE, THAT WOULD
24 NOT REALLY INTERFERE WITH COMMERCIAL, CIVIL AIRCRAFT
25 OPERATIONS, AND THAT THE DRY LAKE AT MUROC WAS EMINENTLY
26 SUITABLE FOR THIS PURPOSE.

27 IN SEPTEMBER 1933, HE SENT A SURVEY PARTY
28 OF ENLISTED PERSONNEL, WHO ARRIVED AT MUROC, SCOUTED THE

1 LAKE, DETERMINED THAT THE EAST LAKE SHORE WAS SUITABLE
2 TO ESTABLISH AN ENCAMPMENT, A TRAINING ENCAMPMENT, AND
3 FROM THAT POINT ON THE LAKE BED WAS USED AND THE
4 SURROUNDING AREA WAS USED FOR MILITARY PURPOSES.

5 Q SO THESE PLANES JUST FLY OVER EDWARDS?
6 AND I'M SORRY. I'LL USE THE TERM
7 "EDWARDS," BUT THE FUTURE NAME OF THIS FACILITY IS
8 EDWARDS; IS THAT CORRECT?

9 A YES. TO PUT IT IN PERSPECTIVE, THIS LAKE
10 WAS ORIGINALLY CALLED RODRIGUEZ DRY LAKE. THAT WAS
11 CHANGED TO MUROC DRY LAKE BY THE FIRST SETTLERS, AND
12 THEN THE BASE THAT EVOLVED THERE WAS FIRST CALLED MUROC.

13 AND THEN IN 1949, FOLLOWING THE DEATH OF A
14 TEST PILOT, NAME GLEN EDWARDS, THE BASE WAS REDESIGNATED
15 AS EDWARDS AIR FORCE BASE, AND IT BECAME EDWARDS AIR
16 FORCE BASE IN JANUARY OF 1950 AND HAS BEEN KNOWN BY THAT
17 NAME SINCE.

18 Q SO THESE PLANES, ARE THEY MERELY FLYING
19 OVER EDWARDS AIR FORCE BASE?

20 A NO. ACTUALLY, THE LAKE WAS USED AS A
21 LANDING SITE SO THAT THE AIRCRAFT TYPICALLY WOULD, AS WE
22 WOULD SAY IN THE MODERN SENSE, DEPLOY. THEY WOULD TAKE
23 OFF FROM WHATEVER THEIR HOME FIELD WAS, FOR EXAMPLE,
24 HAMILTON FIELD UP NEAR SAN FRANCISCO OR FROM MARCH
25 FIELD. AIRCRAFT FLEW IN FROM VARIOUS SPACES, WOULD LAND
26 HERE, WOULD DEPLOY TO MUROC.

27 THE MAINTENANCE CREWS, THE MAINTAINERS AS
28 WE SAY, AND THE AIR CREWS WOULD LIVE IN WHAT WAS THEN A

1 TENT-LIKE ENVIRONMENT. THE AIRCRAFT WOULD BE MAINTAINED
2 BY FUEL TRUCKED IN BY TRUCKS FROM SURROUNDING
3 COMMUNITIES. AND YOU WOULD HAVE AN EXERCISE TAKE PLACE
4 OVER SEVERAL DAYS. EVENTUALLY, BY THE MID 1930S, THIS
5 EXPANDED TO FULL SCALE MILITARY MANEUVERS.

6 Q MAY WE SEE THE NEXT PHOTO?

7 A OKAY. THE NEXT PHOTO SHOWS, IN FACT, THE
8 AIRCRAFT OPERATORS OF THE LAKE. THIS IS A MODERN B-10
9 BOMBER, ONE OF THE PREMIER MILITARY AIRCRAFT TO THIS
10 DAY. VERY INFLUENTIAL AIRPLANE, OPERATING RIGHT OFF THE
11 LAKE WITH FUEL, AS YOU CAN SEE, TRUCKED IN.

12 THE POINT WE NEED TO KEEP IN MIND FOR THE
13 PRESENT DAY IS THAT THESE AIRCRAFT IN THEIR TIME WERE
14 FULLY EQUIVALENT TO A B-2 OR A B-1 OR AN F-35 OR
15 SOMETHING LIKE THAT SEEN TODAY. THESE WERE THE CUTTING
16 EDGE AIRCRAFT OF MILITARY AIRPOWER AT THE TIME.

17 Q AND THIS PICTURE WAS TAKEN WHERE?

18 A THIS WAS TAKEN AT MUROC DRY LAKE ON THE
19 EAST LAKE SHORE.

20 Q AND I'M SORRY. THE APPROXIMATE AGE OF THIS
21 PHOTO?

22 A THE APPROXIMATE DATE, I BELIEVE, IS 1936 ON
23 THIS PARTICULAR PHOTOGRAPH. BY THIS TIME, THE WORLD
24 SITUATION, OF COURSE, IS DETERIORATING RAPIDLY --

25 MR. KUHS: OBJECTION, YOUR HONOR (INAUDIBLE).

26 THE REPORTER: I'M SORRY. I DIDN'T HEAR THE
27 OBJECTION.

28 THE COURT: WE ALL KNOW WHAT IT IS.

1 **THE REPORTER:** I'M HAVING PROBLEMS HEARING.

2 **THE WITNESS:** BY THIS TIME, THE WORLD SITUATION
3 WAS DETERIORATING VERY RAPIDLY; SO THERE WAS A NEED FOR
4 THE AIR FORCE TO EXPAND ITSELF AND TO ADDRESS POSSIBLE
5 FUTURE COMBAT SITUATIONS.

6 WE STARTED TO SEE THE TRAINING OF
7 ANTI-AIRCRAFT CREWS, WHERE THEY WOULD COME TO MUROC AND
8 THEY WOULD TEST THEIR EQUIPMENT AND THEIR TACTICS
9 AGAINST ATTACKING AIRCRAFT, BASICALLY RUNNING WHAT WE
10 WOULD CALL THE RED FLAG, IF YOU WILL, TODAY, SUCH AS RED
11 FLAG TRAINING EXERCISES THAT WE RUN.

12 WE, OF COURSE, HAD A WORLD MARKED BY THINGS
13 LIKE THE WAR IN SPAIN, THE SINO-JAPANESE WAR, THE
14 DESCENT INTO WAR IN EUROPE. AND THE AIR FORCE, WHICH AT
15 THIS TIME CONSISTED OF ABOUT 14,000 PEOPLE AND 1,400
16 AIRCRAFT, IS ON THE VERGE OF A MASSIVE EXPANSION, AND
17 WE'VE JUST SEEN THE VERY BEGINNINGS OF THAT IN THE 1930S
18 AS WE MOVE FORWARD.

19 **BY MR. LEININGER:**

20 **Q** MAY WE SEE THE NEXT PHOTO?

21 **A** YES.

22 **Q** AND WHAT IS THIS? AND I APOLOGIZE. I'LL
23 TRY TO GIVE OUT THE BATES LABEL NUMBERS.

24 **A** THIS IS AN AIRCRAFT CALLED A NORTHROP
25 FLYING WING.

26 **Q** EXCUSE ME, DR. HALLION. LET ME IDENTIFY
27 THIS FOR THE RECORD. BATES LABEL U.S.A.F. 044007.

28 **A** THIS IS AN AIRCRAFT CALLED THE NORTHROP

1 FLYING WING. IT'S DESIGNED BY ONE OF AMERICA'S PREMIER
2 AIRCRAFT DESIGNERS, JACK NORTHROP. FLYING WINGS WERE A
3 SPECIALTY INTEREST OF HIS, AND HE NEEDED A REMOTE SITE
4 TO TEST THIS AIRCRAFT.

5 THIS WAS A CONCEPT THAT WAS CONSIDERED VERY
6 INTRIGUING BY THE MILITARY. IT TOOK YEARS FOR US TO
7 FINALLY REFINE IT. THE B-2 TODAY EXEMPLIFIES IT. BUT
8 NORTHROP NEEDED TO USE MUROC DRY LAKE FOR THIS TESTING,
9 AND HE HAD ARRANGED TO DO SO AT MUROC DRY LAKE.

10 HAP ARNOLD -- WE HEARD IN TESTIMONY
11 YESTERDAY HAP ARNOLD PENNED ON THE SIDE OF A NOTE THAT
12 THIS WAS SOMETHING THAT HE WANTED THE ARMY AIR CORPS TO
13 WATCH VERY, VERY CAREFULLY.

14 MUROC HAD BEEN USED AS A LAKE FROM WHICH
15 AIRCRAFT OPERATED AS EARLY AS THE 1920S, WITH CIVIL
16 PILOTS AND SOME AIRCRAFT BEING TESTED AND EVALUATED
17 THERE. EARLY LOCKHEED AIRCRAFT DESIGNS, FOR EXAMPLE.
18 SO THIS TESTING FUNCTION STARTED AT MUROC VERY, VERY
19 EARLY ON.

20 THIS PHOTOGRAPH HERE IS TAKEN IN 1941. THE
21 TESTING OF THIS AIRCRAFT STARTED IN 1940. AND, OF
22 COURSE, THAT COINCIDES WITH THE MASSIVE BUILDUP IN THE
23 AIR FORCE. THE AIR FORCE AT THIS TIME IS ABOUT 26,000
24 PEOPLE, HAS ABOUT 2,000 AIRPLANES; SO WE CAN SEE THAT
25 INCREASE HAS TAKEN PLACE OVER A FEW YEARS. BUT VERY
26 SHORTLY WE WILL BE GETTING INTO WORLD WAR II, AND WHEN
27 WE GET INTO WORLD WAR II, THIS SPACE WILL EXPLODE. IT
28 WILL GO TO 40,000 PEOPLE.

1 **Q** DR. HALLION, BEFORE WE GO TO WORLD WAR II,
2 WHAT'S THE APPROXIMATE AGE OF THIS PHOTO?

3 **A** THE DATE?

4 **Q** THE DATE.

5 **A** THE DATE IS 1941.

6 **Q** YESTERDAY, WE HEARD SOME TESTIMONY FROM --
7 I BELIEVE IT WAS CORRESPONDENCE FROM NORTHROP WITH
8 REGARD TO TESTING. I BELIEVE IT WAS TESTING OF THIS
9 PLANE AT EDWARDS AIR FORCE BASE.

10 AND THE QUESTION AROSE AS TO WHETHER THERE
11 WERE OTHER PRIVATE AIR FORCE CONTRACTORS INTERESTED OR
12 ACTUALLY USING EDWARDS AIR FORCE BASE AT THIS TIME. CAN
13 YOU PROVIDE ANY ADDITIONAL INFORMATION?

14 **A** YES, INDEED. NORTHROP WAS NOT THE ONLY
15 COMPANY THAT WAS TESTING VEHICLES IN THIS 1941 TIME
16 PERIOD AT MUROC. YOU WOULD HAVE HAD THE CURTISS
17 COMPANY, WHICH DEVELOPED AN EXPERIMENTAL DESIGN ITSELF
18 OF THE -- AN AIRCRAFT CALLED THE ASCENDER. IT WAS A
19 TAILLESS DESIGN. IT WAS TESTED AT MUROC IN THIS TIME
20 PERIOD, A VERY EARLY PROTOTYPE.

21 YOU HAD THE FIRST CONCENTRATED TESTING OF
22 WHAT WE WOULD TERM TODAY "DRONE TECHNOLOGY." YOU HAD
23 FLEET WINGS, RADIO CONTROLLED AIRCRAFT, RADIO PLANE,
24 RADIO CONTROLLED AIRCRAFT FLOWN FROM MUROC AT THE SAME
25 TIME, WORKING IN CONCERT WITH THE MILITARY. SO
26 CERTAINLY IT'S NOT ACCURATE TO SAY THAT THE TESTS OF THE
27 MUROC -- OF THE FLYING WING AT MUROC WERE A ONE-OFF
28 EVENT, IF YOU WILL.

1 **Q** WHY, IN YOUR OPINION, WERE THESE
2 CONTRACTORS INTERESTED IN COMING TO EDWARDS?

3 **A** EDWARDS OFFERED THREE REMARKABLE FEATURES
4 THAT IT STILL HAS. IT HAD A UNIQUE LAKE, 65 SQUARE
5 MILES, FIRM ENOUGH TO LAND THE LARGEST AIRCRAFT IN THE
6 WORLD. STILL CAN ON THAT LAKE.

7 IT HAD TREMENDOUS OPEN SPACE IN CASE
8 ANYTHING WENT WRONG. YOU WERE NOT ENDANGERING THE
9 CIVILIAN AREA OR CIVILIAN POPULATION. IT HAD FANTASTIC
10 WEATHER THAT GAVE YOU VIRTUALLY YEAR-ROUND FLYING
11 CONDITIONS.

12 BUT THE LAKE -- YOU FIND THAT THE LAKE IS
13 REALLY THE CORE, THEN AND NOW, TO WHY PEOPLE ZEROED IN
14 TO MUROC SLASH EDWARDS AS A TRAINING SITE, AS A MANEUVER
15 SITE, AS A FLIGHT TEST SITE, AS AN OPERATIONAL
16 DEPLOYMENT CENTER.

17 **Q** SO I'M SORRY TO HAVE INTERRUPTED YOUR
18 CHRONOLOGY. SO WE'RE IN WORLD WAR II. AND YOU'RE
19 SAYING THAT THERE WAS A BUILDUP, I BELIEVE, OF
20 POPULATION IN TRAINING?

21 **A** YES. THE POPULATION OF MUROC AT THIS TIME
22 WENT TO 40,000 PEOPLE. NOW, THEY WERE SPLIT REALLY
23 BETWEEN TWO ACTIVITIES. YOU HAD A VERY SMALL NUMBER
24 THAT BEGAN WORKING AT WHAT BECAME NORTH BASE, THE
25 SO-CALLED MUROC FLIGHT TEST BASE, EVALUATING VERY
26 SENSITIVE -- WHAT WE WOULD IN TODAY'S WORLD TERM "BLACK
27 WORLD TECHNOLOGY."

28 THEY WERE EVALUATING TURBOJET (PHONETIC)

1 AIRCRAFT, THE BELL P-59, THE FIRST AMERICAN JET
2 AIRPLANE. THEY WERE EVALUATING OTHER JET AIRCRAFT THAT
3 FOLLOWED IT. THEY WERE CONDUCTING ROUTINE TESTS ON
4 COMBAT TACTICS TO USE AGAINST ENEMY JET AIRCRAFT. WE
5 HAD A TRAINING FUNCTION ON THE WESTERN LAKESHORE THAT
6 WAS ESTABLISHED. A RUNWAY COMPLEX WAS BUILT, PERMANENT
7 HANGARS, RAMP SPACE WAS BUILT.

8 AND THIS TRAINED BOMBER CREWS, BOMBER CREWS
9 OPERATING AIRCRAFT OVER ON MISSIONS THAT SOMETIMES WOULD
10 FLY AS MUCH AS A THOUSAND OR MORE MILES FROM MUROC TO
11 TRAIN THEM IN FORMATION FLYING, DEFENSIVE FLYING AGAINST
12 ATTACKING ENEMY FIGHTERS, THE RUDIMENTARY BASICS OF
13 BOMBER OPERATIONS THAT WE WOULD SEE INCORPORATED IN THE
14 AIR WAR AGAINST NAZI GERMANY AND IMPERIAL JAPAN.

15 WE HAD THE TRAINING OF LEAD AIR CREWS, IN
16 OTHER WORDS, THE BOMBER ELITE THAT WOULD GO OUT AND MARK
17 TARGETS AND WOULD LEAD FORMATIONS OF BOMBERS TO ATTACK
18 TARGETS.

19 WE HAD THE INSTALLATION OF A WOODEN MOCK-UP
20 OF A JAPANESE SHIP ON THE SOUTH LAKESHORE THAT WAS USED
21 TO TRAIN ANTISHIPPING STRIKE CREWS IN BASICALLY
22 ATTACKING SHIPS AT LOW ALTITUDE IN WHAT WAS CALLED "SKIP
23 BOMBING."

24 WE HAD THE TESTS THERE OF THE AERODYNAMIC
25 SHAPE OF THE FIRST ATOMIC BOMB. THE AERODYNAMIC SHAPE
26 OF THE FIRST ATOMIC BOMB THAT WAS USED AT HIROSHIMA WAS
27 AERODYNAMICALLY EVALUATED IN TERMS OF ITS BALLISTIC
28 PROPERTIES, FIRST AT MUROC AND THEN THAT WAS MOVED TO

1 WENDOVER, UTAH.

2 BASICALLY, WE STARTED TO SEE WHAT HAPPENED
3 HERE TO MUROC-EDWARDS IN THE POST WORLD WAR II ERA. WE
4 STARTED TO SEE IT PARTICIPATING IN TWO GREAT
5 REVOLUTIONS, THE TURBINE ENGINE REVOLUTION AND THE
6 REVOLUTION OF HIGH SPEED FLIGHT.

7 Q MAY WE HAVE THE NEXT PHOTO? WHAT IS THIS
8 PHOTO OF?

9 A THIS IS A PHOTO OF THE BELL XS-1 SUPERSONIC
10 RESEARCH AIRCRAFT, COMMONLY KNOWN TO AVIATION HISTORY AS
11 THE BELL X-1. THIS AIRCRAFT EXEMPLIFIES REALLY THE
12 TRANSFORMATION OF FLIGHT WORLDWIDE FROM THE TECTONIC TO
13 THE SUPERSONIC ERA. AT MUROC, ON OCTOBER 14, 1947, THIS
14 AIRCRAFT BECAME THE FIRST AIRPLANE IN THE HISTORY OF
15 FLIGHT TO EXCEED THE SPEED OF SOUND, CARRYING A HUMAN
16 PILOT.

17 NOW, IF WE LOOK AT THIS REVOLUTION, WHAT'S
18 INTERESTING IS THAT THE BELL X-1 HAD BEEN DESIGNED TO
19 OPERATE FROM A CONVENTIONAL AIRFIELD, AND AS IT WAS
20 BEING DEVELOPED, IT WAS REALIZED THAT THIS MADE NO
21 SENSE; THAT FOR SAFETY, FOR SECRECY, BUT ABOVE ALL FOR
22 FLIGHT SAFETY, THE ONLY PLACE THAT ONE COULD SAFELY TEST
23 THIS AIRCRAFT WAS THE DRY LAKE AT WHAT WAS THEN MUROC,
24 MUROC FIELD.

25 AND FLIGHT TESTING OF THIS AIRCRAFT BEGAN
26 IN OCTOBER 1946. IN OCTOBER 1947, A YEAR LATER, WE HAD
27 THAT FIRST SUPERSONIC FLIGHT. WE HAD SUCCESSES OF THIS
28 AIRCRAFT THAT WERE CALLED THE "X SERIES." WE HAVE THOSE

1 AIRCRAFT UP TO THE PRESENT DAY, AS WE SHALL SEE IN SOME
2 OF THE OTHER EXHIBITS.

3 Q CAN WE HAVE THE NEXT PHOTO, PLEASE?

4 A YES.

5 Q WHAT DOES THIS PHOTO SHOW?

6 A THIS PHOTO SHOWS AN EXAMPLE OF FOUR EARLY
7 AMERICAN SO-CALLED "CENTURY SERIES SUPERSONIC JET
8 FIGHTERS." THESE ARE CALLED THE "CENTURY SERIES"
9 BECAUSE THEIR NUMBERS BEGIN WITH A HUNDRED.

10 YOU HAVE -- IN THESE PHOTOS YOU HAVE THE
11 F-100, THE F-102, THE F-104, THE F-101. THREE OF THESE
12 AIRPLANES ARE MANUFACTURED AT PLANT 42.

13 Q LET'S STOP YOU THERE FOR ONE MOMENT.
14 WHAT'S THE AGE OF THIS PHOTO?

15 A THIS PHOTO IS, I WOULD SAY, CIRCA 1955.

16 Q JUST TO REFRESH EVERYONE'S MEMORY, WHAT IS
17 AIR FORCE PLANT 42 AND WHAT WAS IT USED FOR AT THIS
18 TIME?

19 A AIR FORCE PLANT 42 WAS ORIGINALLY A
20 CIVILIAN FLYING FIELD IN THE SECOND WORLD WAR. IT WAS
21 TAKEN OVER BY THE ARMY AIR FORCES, AND IT WAS USED AS A
22 FIELD FROM WHICH WE DEPLOYED OPERATIONAL BOMBERS AND
23 FIGHTER AIRCRAFT, DID A GREAT DEAL OF FIGHTER AND
24 BOMBING TRAINING, AND HEADQUARTERED THE FIRST AMERICAN
25 JET FIGHTER TRAINING GROUP, THE 412 FIGHTER GROUP, FROM
26 THAT BASE.

27 AFTER THE SECOND WORLD WAR, IT RETURNED
28 BRIEFLY TO CIVILIAN HANDS AND THEN WAS TAKEN OVER AGAIN,

1 IN RESPONSE TO THE KOREAN WAR, AS A MAJOR PRODUCTION
2 FACILITY FOR THE AIR FORCE AS PLANT 42.

3 IT IS IMPORTANT TO DISTINGUISH THAT EDWARDS
4 UNDERTOOK DEVELOPMENTAL FLIGHT TEST WORK. AT PLANT 42,
5 YOU HAD PRODUCTION FLIGHT TEST WORK, IN OTHER WORDS,
6 VERIFYING THAT THE AIRCRAFT PRODUCED WERE SAFE TO BE
7 TRANSFERRED TO THE CUSTOMER, WHOEVER THAT WAS. NAVY
8 AIRCRAFT WOULD GO TO PLANT 42. AIR FORCE AIRCRAFT WOULD
9 GO TO PLANT 42.

10 AND THERE WAS A PARTNERSHIP SO THAT EVEN
11 THOUGH THESE WERE GEOGRAPHICALLY SEPARATE ENTITIES,
12 THERE WAS A PARTNERSHIP BACK AND FORTH BETWEEN THE
13 FLIGHT TEST CENTER AT EDWARDS AIR FORCE BASE AND
14 PLANT 42, WHERE THE PRODUCTION FLIGHT TEST AND THE
15 DEVELOPMENT FLIGHT TEST TEAMS WOULD WORK VERY, VERY
16 CLOSELY TOGETHER TO REFINE THESE AIRCRAFT.

17 SO AS I SAID, YOU HAVE THREE OF THESE
18 AIRPLANES HERE MANUFACTURED AT PLANT 42, AND THEY'RE
19 SHOWN ON THE RAMP HERE OF EDWARDS AIR FORCE BASE. THEY
20 WERE UNDERGOING DEVELOPMENTAL FLIGHT TESTS AT THAT
21 POINT.

22 Q SHOW THE NEXT SLIDE, PLEASE.

23 WHAT IS THIS PICTURE OF?

24 A THIS IS A PHOTO OF THE NORTHROP B-2, THE
25 SO-CALLED STEALTH BOMBER. IT'S A PHOTO I TOOK MYSELF AT
26 THE TIME OF ITS FIRST FLIGHT AT PALMDALE IN 1989.

27 Q SO I'M SORRY, LET ME INTERRUPT. PALMDALE?

28 A PALMDALE IS COMMON SHORTHAND FOR AIR FORCE

1 PLANT 42.

2 THIS AIRCRAFT WAS PRODUCED -- WAS BUILT AT
3 AIR FORCE PLANT 42 ON THE CONDITION THAT IT STAY IN
4 SECRECY, AND THEN WAS FLOWN ON ITS FIRST FLIGHT FROM THE
5 PALMDALE PLANT TO EDWARDS AIR FORCE BASE, WHERE, OF
6 COURSE, IT THEN ENTERED INTO DEVELOPMENTAL FLIGHT TESTS
7 AT A SPECIAL FLIGHT TEST FACILITY LOCATED ON WHAT HAD
8 BEEN SOUTH BASE OF THE INITIAL EDWARDS AIR FORCE BASE.

9 Q AND I'M SORRY. THE AGE OF THIS PHOTO?

10 A THIS PHOTO IS 1989.

11 Q SO IN 1989 THIS LINK BETWEEN EDWARDS AIR
12 FORCE BASE AND AIR FORCE PLANT 42 CONTINUES?

13 A YES. THE LINK BETWEEN EDWARDS AIR FORCE
14 BASE AND PLANT 42, WHICH EXISTED IN A TRAINING SENSE AS
15 FAR BACK -- BEFORE PLANT 42, AS FAR BACK AS OPERATIONS
16 IN WORLD WAR II, WITH THE BOMBER TRAINING AND THINGS OF
17 THAT SORT, THAT LINK BECAME PROFOUND IN THE 1950S, AS
18 YOU HAD THE PRODUCTION ACTIVITIES AT AIR FORCE PLANT 42
19 AND THE FLIGHT TEST ACTIVITIES AT EDWARDS, AND THEN HAS
20 CONTINUED LARGELY UP TO THE PRESENT DAY. BASICALLY,
21 THERE'S STILL THAT NEXUS TO THE PRESENT DAY.

22 Q CAN WE HAVE THE NEXT?

23 AND I BELIEVE THE NEXT, YOUR HONOR, IS
24 ACTUALLY A SHORT VIDEO.

25

26 (AT THIS TIME A VIDEO WAS SHOWN.)

27

28

1 **BY MR. LEININGER:**

2 **Q** CAN YOU EXPLAIN WHAT THIS IS?

3 **A** YES. THIS IS AN F-16 FIGHTER THAT'S GOTTEN
4 INTO SOME DIFFICULTY. IT CANNOT EXTEND ITS LANDING
5 GEAR. NOW, UNDER THE --

6 **Q** LET'S PAUSE THAT FOR ONE SECOND. I'M
7 SORRY.

8 **A** OKAY.

9 **Q** IT SEEMS TO BE OFF THE IMAGE.

10 **MR. LEININGER:** SEE IF WE CAN BACK THAT UP.

11 SORRY, YOUR HONOR.

12 **THE WITNESS:** ONE OF THE MAJOR VALUES OF THE DRY
13 LAKE OF EDWARDS HAS BEEN AS A RECOVERY AIRCRAFT AREA FOR
14 AIRCRAFT IN DISTRESS. WE HAVE HAD HUNDREDS, HUNDREDS OF
15 PASSENGERS' LIVES SAVED IN COMMERCIAL AIRCRAFT THAT HAVE
16 MADE EMERGENCY LANDINGS ON THE DRY LAKE.

17 IT HAS BEEN A SITE WHERE WE HAVE MADE
18 NUMEROUS LANDINGS OF AIRCRAFT THAT WERE IN DISTRESS,
19 SUCH AS THIS F-16 SHOWN HERE, WHICH, AS THIS FILM
20 PROGRESSES, YOU SEE TOUCHED DOWN VERY, VERY SMOOTHLY ON
21 THE LAKE'S SURFACE.

22 WHY HERE? WHY NOT A RUNWAY? WELL, BECAUSE
23 AN AIRCRAFT CAN DIVERGE OFF A RUNWAY. THERE ARE
24 OBSTRUCTIONS TYPICALLY ON THE SIDES OF RUNWAYS. THERE
25 ARE BUILDINGS. YOU MAY ENDANGER OTHER PEOPLE WHEREAS
26 HERE YOU HAVE THIS WIDE, WONDERFULLY OPEN, 65 SQUARE
27 MILE AREA.

28 AS LONG AS THAT -- AS LONG AS THAT LAKE IS

1 ABLE TO BE USED OVER THE ENTIRE AREA OF THE LAKE, WHICH
2 IS DEPENDENT ON A LOT OF FACTORS, THIS, OF COURSE,
3 CONSTITUTES A UNIQUE SAFETY ATTRIBUTE OF AMERICAN
4 AVIATION.

5 **MR. LEININGER:** CAN YOU SHOW THE NEXT SLIDE,
6 PLEASE?

7 **THE WITNESS:** THIS IS ANOTHER EXAMPLE, PERHAPS, I
8 THINK, ONE OF THE MOST CHALLENGING. WE HAD A B-2 -- I'M
9 SORRY -- A B-1 BOMBER THAT GOT INTO DIFFICULTY AND COULD
10 NOT EXTEND ITS NOSE GEAR. NOW, IF YOU TAKE A LOOK AT
11 THE -- AT THIS PHOTOGRAPH, THE NOSE GEAR WOULD BE JUST
12 ABOUT HERE (INDICATING).

13 NOW, NOTICE THAT THE B-1 HAS THIS COMPLEX
14 ARRANGEMENT WHERE YOU HAVE THE ENGINES LOCATED BELOW THE
15 CENTER SECTION OF THE WING FUSELAGE STRUCTURE AND YOU
16 HAVE AN EXTENDED LANDING GEAR.

17 THE PILOT HERE HAD TO MAKE A VERY, VERY
18 TRICKY APPROACH, KEEPING JUST THE RIGHT AMOUNT OF ANGLE
19 OF ATTACK DURING HIS APPROACH TO LAND. TOO MUCH, AND
20 WHEN THE AIRCRAFT STALLED OUT, THE NOSE WOULD SMASH
21 DOWN, BREAKING OFF THE FUSELAGE AND LIKELY RESULTING IN
22 AN ACCIDENT THAT WOULD HAVE KILLED ALL ON BOARD. BUT AS
23 WE'LL SEE IN THE NEXT PHOTOS --

24 **BY MR. LEININGER:**

25 **Q** LET ME PAUSE, STOP YOU RIGHT THERE FOR A
26 QUESTION.

27 **A** YES.

28 **Q** SO YOU SAID THAT THIS APPROACH FOR THIS

1 PLANE IN JEOPARDY HAD TO BE AT A LOW ANGLE OVER A LARGE,
2 VAST DISTANCE?

3 A YOU WOULD HAVE TO MAKE A VERY FLAT, VERY
4 CAREFUL APPROACH. AND BECAUSE OF THAT, THE TERRAIN
5 AROUND EDWARDS AND THAT LONG LENGTH OF THAT LAKE,
6 PERFECTLY SMOOTH, PERFECTLY FLAT LAKE IS IDEALLY SUITED
7 FOR THIS.

8 WE WILL NOTE THAT IF YOU LOOK AT AN
9 OVERHEAD IMAGE OF THE DRY LAKE BED, YOU HAVE RUNWAYS
10 MARKED OUT ALL OVER THAT LAKE, CRISSCROSSING THAT LAKE.
11 DEPENDING ON THE WIND CONDITIONS, THE SURFACE
12 CONDITIONS, YOU HAD A WIDE RANGE OF LANDING
13 OPPORTUNITIES THERE.

14 Q NEXT SLIDE.

15 A THE NEXT SLIDE SHOWS, OF COURSE, THE LAST
16 STAGES OF THE APPROACH, WITH THE EMERGENCY VEHICLES
17 ALREADY DEPLOYED (INDICATING).

18 Q NEXT SLIDE.

19 A THERE'S THE TOUCHDOWN, AN EXTRAORDINARILY
20 SMOOTH TOUCHDOWN. F-111 CHASE AIRCRAFT HERE. AND
21 THERE'S THE AIRCRAFT AT REST. AND AS YOU CAN SEE,
22 IT'S -- YOU HAVE THE FEELING ONE CAN SIMPLY JACK THIS
23 UP, LOAD THE GEAR, FIX THE PROBLEM, AND RETURN THE
24 AIRCRAFT TO OPERATIONAL SERVICE. NOT QUITE THAT EASY,
25 BUT HAVING SAID THAT, THIS IS A LOT BETTER THAN A
26 SMOKING HOLE AND A FLAMING AIRPLANE.

27 Q NEXT SLIDE.

28 A THIS IS INTERESTING BECAUSE WHAT WE SEE

1 HERE IS THE DIVERGENCE OF THE AIRCRAFT OFF THE RUNWAY.
2 HAD THIS BEEN RECOVERED AT A CONVENTIONAL B-1 FIELD, SAY
3 ELLSWORTH AIR FORCE BASE, SOMETHING OF THIS SORT WHERE
4 YOU HAD TO RECOVER THE AIRCRAFT ON A CONVENTIONAL
5 RUNWAY, YOU MIGHT WELL HAVE HAD A DISASTER, BUT HERE,
6 WITH THIS OPEN SPACE, IT WAS NO BIG DEAL.

7 **Q** NEXT SLIDE.

8 **A** THIS SLIDE I THINK IS USEFUL TO US BECAUSE
9 ONCE AGAIN IT SHOWS THE DIVERGENCE OF THE AIRCRAFT
10 TOWARD THE END OF THE LANDING RUN, BUT ALSO IT SHOWS THE
11 INTERSECTION OF RUNWAYS AND THE COMPASS ROADS THAT IS
12 PAINTED INTO THE LAKE SURFACE, OILED INTO THE LAKE
13 SURFACE, SO THAT PEOPLE GET A COMPREHENSION OF THE
14 HEADINGS, WHERE THEY CAN LAND AND THINGS OF THAT SORT.

15 **Q** SO LET'S CONTINUE WITH THE NEXT SLIDE.

16 SO WE'VE GONE PAST WORLD WAR II. YOU'VE
17 TESTIFIED WITH REGARD TO THIS.

18 **A** I THINK WE CAN SKIP THIS SLIDE THAT'S
19 SHOWN.

20 **Q** OH, YES. SKIP THIS, PLEASE.

21 WHAT'S THIS A PICTURE OF?

22 **A** THE CAPABILITIES OF EDWARDS AND THE
23 FACILITIES AT EDWARDS HAD TO MATCH CHANGES IN NATIONAL
24 STRATEGY, NATIONAL SECURITY POLICY, AND ALSO THE
25 STRUCTURE AND THE NEEDS OF THE AMERICAN MILITARY
26 ESTABLISHMENT.

27 SO EXAMPLE, IN THE MIDDLE 1950S WE WERE
28 BEGINNING TO ENTER INTO WHAT WAS COMMONLY CALLED THE

1 "SPACE AGE," WHICH INITIALLY BEGAN IN 1957. WE WERE
2 VERY CONCERNED ABOUT DEVELOPMENT OF ROCKET ENGINE
3 TECHNOLOGY, TO PLACE PAYLOADS NOT ONLY INTO SPACE, BUT
4 ALSO TO PROPEL BALLISTIC VEHICLES AROUND THE WORLD, TO
5 DEVELOP INTO BALLISTIC MISSILES.

6 SO WE ESTABLISHED LEUHMANN -- THE AIR FORCE
7 ROCKET LABORATORY ON LEUHMANN RIDGE, ABOVE THE EAST
8 LAKESHORE, AND WE BUILT THESE HUGE TEST STANDS
9 (INDICATING) WHICH REQUIRED THE USE OF, IN SOME CASES,
10 EXOTIC PROPELLANTS, WHAT WE WOULD CONSIDER COMMONPLACE
11 TODAY BUT WHICH WERE EXOTIC IN THEIR DAY, LIQUID OXYGEN,
12 WATER, ALCOHOL.

13 BUT ALSO WHEN WE WOULD FIRE THESE ENGINES,
14 SOME OF WHICH HAD THRUST RATINGS OF UP TO
15 175,000 POUNDS, WE HAD TO QUENCH THE STRUCTURE AND
16 QUENCH THE BLAST SHIELDS THAT DEFLECTED THE HOT,
17 INTENSELY HOT ROCKET EXHAUST HERE WITH LARGE AMOUNTS OF
18 WATER.

19 Q CAN WE HAVE THE NEXT SLIDE?

20 A THAT HAS CONTINUED TO THE PRESENT DAY.
21 LEUHMANN RIDGE TESTED THE ENGINES AND TOOK US TO THE
22 MOON. LITERALLY, THE SATURN F-1 ENGINE WAS TESTED AT
23 LEUHMANN RIDGE.

24 THIS IS A VERY IMPORTANT FACILITY FOR THE
25 AIR FORCE TODAY BECAUSE SOME OF THE ROCKET ENGINE TEST
26 SITES THAT WE HAVE USED IN THE PAST, FOR EXAMPLE, SANTA
27 SUSANA IN THE L.A. HILLS, IS NO LONGER WITH US.

28 AND SO THIS IS A PHOTO TAKEN, OF PERHAPS

1 THREE YEARS AGO, SHOWING A AEROJET, SOLID ROCKET
2 BOOSTER, DESIGNED TO HELP RESTORE AMERICA -- AMERICAN
3 SUPREMACY IN SPACE, BEING TESTED AT LEUHMANN RIDGE AT THE
4 AIR FORCE ROCKET LAB.

5 Q DO YOU HAVE ANY ESTIMATE OF HOW MUCH WATER
6 WAS USED TO QUENCH THESE, YOU SAID?

7 A YOU WOULD BE USING AT LEAST TENS OF
8 THOUSANDS OF GALLONS. IN SOME CASES, I WOULD SUSPECT
9 YOU WERE USING -- FOR SOMETHING LIKE AN F-1 YOU WERE
10 USING HUNDREDS OF THOUSANDS OF GALLONS.

11 WE HAD A QUESTION YESTERDAY DURING
12 TESTIMONY WHERE THERE WAS AN APPARENT INDICATION OF A
13 DROP AND RISE AND DROP IN THE USE OF WATER IN 1960S. I
14 AM CONVINCED THAT WHAT THAT REFLECTED, YOU COULD
15 PROBABLY CORRELATE THAT TESTING TO ROCKET ENGINE TESTING
16 OF THE SATURN F-1 ENGINES WHICH WERE BEING TESTED AT THE
17 SITE.

18 WE HAVE TESTED THE ENGINES FOR THE LARGE
19 COMMERCIAL BOOSTERS, THINGS LIKE THE SATURN 5, THE LARGE
20 MILITARY AIRCRAFT, MILITARY BOOSTERS UP THROUGH THE MX.
21 BASICALLY, EDWARDS HAS BEEN CRUCIAL TO BUILDING AMERICAN
22 SPACE POWER AS WELL AS AERONAUTICS POWER.

23 MR. ZIMMER: OBJECTION, YOUR HONOR. MR. ZIMMER
24 FOR BOLTHOUSE. THERE WAS NO TESTIMONY BY THIS WITNESS
25 IN HIS DEPOSITION WHEN HE GAVE ALL HIS OPINIONS WITH
26 REGARD TO WATER USAGE ON THE BASE. I MOVE TO STRIKE THE
27 PORTIONS OF THAT TESTIMONY THAT RELATE TO WATER USAGE.

28 MR. KUHS: I WOULD JOIN, YOUR HONOR. HE'S BEEN

1 IDENTIFIED AS AN HISTORIAN, NOT AS AN EXPERT ON WATER
2 USE AND CONSUMPTION.

3 **THE COURT:** WELL, I THINK THAT IT BROADLY IS
4 ENCOMPASSED BY THE KNOWLEDGE OF HISTORIAN. I'M GOING TO
5 OVERRULE IT.

6 **BY MR. LEININGER:**

7 **Q** LET'S GO TO THE NEXT SLIDE, PLEASE. WHAT
8 DOES THIS SHOW?

9 **A** THIS AIRCRAFT IS A GLOBAL HAWK. WE WOULD
10 COMMONLY CALL THIS A DRONE. MORE PROFESSIONALLY, IT
11 WOULD BE CALLED A "REMOTELY PILOTED AIRCRAFT SYSTEM."
12 IT IS A I.S.R. SYSTEM, INTELLIGENCE, SURVEILLANCE, AND
13 RECONNOISSANCE SYSTEM.

14 ONCE AGAIN, IT SHOWS THE NEXUS WE HAVE HERE
15 BETWEEN PLANT 42 AND EDWARDS; BUILT AT PLANT 42, TESTED
16 AT EDWARDS, FLOWN OVER THE EDWARDS RANGE, DEPLOYED AT
17 VERY LONG DISTANCE FROM EDWARDS, EVEN INTERCONTINENTAL
18 DISTANCES FROM EDWARDS.

19 IT'S REMARKABLE TO ME THAT THIS REALLY KIND
20 OF TAKES US BACK REALLY TO THE ORIGINAL PURPOSES OF
21 EDWARDS, WHERE WE HAD THOSE FIRST EARLY DRONE TESTS IN
22 1940 AND '41, WHERE WE SEE THAT REMARKABLE CONSTANCY OF
23 PURPOSE, WHERE WE HAVE THE SITE USED FOR ITS LAKE, FOR
24 ITS LARGE, OPEN SPACE, AS FAR AS WEATHER CONDITIONS.

25 THIS IS, ONCE AGAIN, REPRESENTING THE
26 LINKAGE OF TWO GREAT REVOLUTIONS, THE CLASSIC
27 AERONAUTICS REVOLUTION, STRUCTURES, AERODYNAMICS,
28 PROPULSION, CONTROLS, AND THE COMPUTER REVOLUTION.

1 THESE GET FUSED TOGETHER.

2 THAT B-2 WE SAW EARLIER WAS AN AIRCRAFT
3 THAT SIMPLY COULD NOT HAVE BEEN DESIGNED, BUILT, FLIGHT
4 TESTED, OR USED OPERATIONALLY WITHOUT THE INTEGRATION OF
5 THE COMPUTER IN AEROSPACE, AND WE SEE THAT IN THIS
6 SYSTEM HERE AS WELL.

7 Q LET'S CONTINUE WITH THIS THEME OF
8 REVOLUTION. COULD WE HAVE THE NEXT SLIDE, PLEASE?

9 A ONCE AGAIN, JUST AS WE SAW THE FIRST
10 TESTING OF THE NORTHROP FLYING WING AT EDWARDS IN THE
11 1940S, THEN WE SAW THE FLIGHT OF THE B-2 FLYING WING IN
12 THE LATE 1980S AND ITS INCORPORATION OF FLIGHT TESTING,
13 WE SEE A NEW FLYING WING APPEARING IN THE SKIES OVER
14 EDWARDS.

15 THIS IS THE SO-CALLED X-48. IT IS
16 TECHNICALLY CALLED A BLENDED WING BODY DESIGN. IT
17 REPRESENTS, LIKE SO MANY OF THE RESEARCH AIRCRAFT
18 PROJECTS HAVE WITH HIGH TECHNOLOGY, A PARTNERSHIP
19 BETWEEN NASA AND THE AIR FORCE, IF YOU TAKE A LOOK AT
20 THE ORGANIZATIONAL SYMBOLS, AND THE INDUSTRIAL WORLD, IN
21 THIS CASE BOEING.

22 THIS IS A SUBSCALE DEMONSTRATOR OF A
23 CONFIGURATION THAT IS BEING EXPLORED FOR A VARIETY OF
24 CIVIL AND MILITARY MISSIONS. SOME OF THOSE INCLUDE
25 PASSENGER CARRYING, FREIGHT CARRYING, AERIAL REFUELING,
26 LONG-RANGE, STANDOFF MISSILE LAUNCHING, ADVANCED
27 INTELLIGENCE SURVEILLANCE, RECONNAISSANCE APPLICATIONS,
28 THINGS OF THAT SORT. THIS, I THINK, REPRESENTS ONE

1 ASPECT OF THE FUTURE OF FLIGHT.

2 **THE COURT:** IS THIS A HYPERSONIC MODEL?

3 **THE WITNESS:** NO, YOUR HONOR. THIS IS NOT A
4 HYPERSONIC AIRCRAFT, BUT I WILL HAVE ONE FOR YOU
5 SHORTLY. I'M VERY FOND OF HYPERSONICS --

6 **THE COURT:** ALL RIGHT.

7 **THE WITNESS:** -- SINCE MY E-MAIL IS
8 DRHYPERSONIC@AOL.COM.

9 **MR. ZIMMER:** WELL DISCIPLINED.

10 **BY MR. LEININGER:**

11 **Q** LET'S TALK -- BEFORE WE LEAVE THIS PHOTO, I
12 JUST WANT TO EXPLORE A LITTLE MORE THIS PARTNERSHIP YOU
13 SAY BETWEEN NASA AND THE MILITARY. CAN YOU ELABORATE A
14 LITTLE BIT MORE? YOU POINTED, I BELIEVE, AT THE NASA
15 SYMBOL ON THIS AIRCRAFT.

16 **A** YES, I DID. THE RELATIONSHIP BETWEEN NASA
17 AND THE MILITARY IS A LONG AND INEXTRICABLY BOUND ONE.
18 IT ACTUALLY PREDATES THE AGENCY. IT GOES BACK TO AN
19 OLDER ORGANIZATION FROM WHENCE NASA SPRANG, THE NATIONAL
20 ADVISORY COMMITTEE FOR AERONAUTICS, ESTABLISHED IN 1915
21 BY A CONGRESSIONAL ACT --

22 **MR. ZIMMER:** YOUR HONOR.

23 **THE WITNESS:** -- A MILITARY APPROPRIATION ACT.

24 **MR. ZIMMER:** OBJECTION.

25 **THE COURT:** HOLD ON JUST A MINUTE, PLEASE.

26 WHAT'S THE OBJECTION?

27 **MR. ZIMMER:** ANTICIPATING A LENGTHY RESPONSE, THE
28 OBJECTION IS THAT THERE WAS NO DISCUSSION BY THIS

1 WITNESS IN DEPOSITION TESTIMONY, WHERE HE GAVE ALL HIS
2 OPINIONS, AS TO THE INTERRELATIONSHIP BETWEEN NASA AND
3 THE UNITED STATES AIR FORCE.

4 **MR. LEININGER:** HE WAS DISCUSSING MILITARY
5 HISTORY, YOUR HONOR. AND WE'RE PROVIDING THE LINK
6 BETWEEN NASA AND THESE MILITARY HISTORIAN PURPOSES.

7 **THE COURT:** I DON'T KNOW WHAT QUESTIONS WERE ASKED
8 AT THE DEPOSITION.

9 **MR. ZIMMER:** THESE QUESTIONS WERE NOT ASKED. I
10 THINK WE CAN HAVE AN AGREEMENT ON THAT.

11 **THE COURT:** WELL, I MEAN, ON CROSS-EXAMINATION
12 WERE THEY ASKED?

13 **MR. ZIMMER:** HE WAS ASKED FOR ALL THOSE OPINIONS,
14 AND HE NEVER GAVE ANY OPINION THAT DEALT WITH NASA
15 WHATSOEVER. WE'RE TALKING ABOUT THE HISTORY OF EDWARDS
16 AIR FORCE BASE, NOT NASA.

17 **THE COURT:** ALL RIGHT. I'M GOING TO TAKE THIS
18 TESTIMONY SUBJECT TO MOTION TO STRIKE. YOU WILL BE ABLE
19 TO CROSS-EXAMINE HIM. IF YOU NEED ADDITIONAL TIME TO
20 PRESENT CONTRARY EVIDENCE, YOU WILL HAVE THAT.

21 **BY MR. LEININGER:**

22 **Q** SO BRIEFLY, THE LINK HERE WE WERE
23 DISCUSSING BETWEEN NASA AND MILITARY OPERATIONS AND
24 PURPOSES.

25 **A** NASA AND MILITARY PERSONNEL SERVED ON JOINT
26 PROGRAMS. THEY SERVED ON JOINT ASSIGNMENTS. THEY
27 SERVED ON JOINT AIRCRAFT DEVELOPMENT PROGRAMS, FOR
28 EXAMPLE, OF SOME OF THE SLIDES WE SHOWED HERE, THE BELL

1 X-1, OTHER RESEARCH AIRPLANES, THE NORTH AMERICAN X-15
2 HYPERSONIC VEHICLE. THEY DETERMINED IN MANY CASES THE
3 RECONNAISSANCE, THE AIRCRAFT THAT WE WOULD DO.

4 AND IN THE 1950S, ON THE CENTURY SERIES
5 THAT I SHOWED YOU, THE NACA PLAYED A VITAL ROLE IN
6 RESOLVING SOME OF THE VERY SERIOUS DEVELOPMENTAL FLIGHT
7 TEST PROBLEMS THAT WE HAD WITH AIR FORCE FIGHTERS IN
8 THAT TIME PERIOD. I'M THINKING PARTICULARLY OF A
9 PROBLEM CALLED "AERODYNAMIC PITCH-UP." I'M THINKING
10 ALSO OF ANOTHER PROBLEM CALLED "INERTIAL COUPLING."

11 NASA RESEARCH ON ELECTRONIC FLIGHT CONTROLS
12 WAS CRUCIAL TO THE DEVELOPMENT OF THE F-16. IT WAS
13 CRUCIAL TO THE DEVELOPMENT OF THE B-2.

14 WE HAD A JOINT NASA, AIR FORCE RESEARCH
15 EFFORT AT EDWARDS AIR FORCE BASE IN THE 1980S CALLED
16 A.F.T.I., ADVANCED FIGHTER TECHNOLOGY INTEGRATION. WE
17 HAD T.A.C.T., TRANSONIC AIRCRAFT TECHNOLOGY PROGRAM.
18 THESE WERE PROGRAMS IN WHICH NASA AND THE AIR FORCE
19 PEOPLE SERVED SIDE BY SIDE, IN SOME CASES SHARED
20 OFFICES. AND IT'S TRUE FOR SOME OF THE ACTIVITIES THAT
21 WE HAVE IN THE PRESENT DAY, TODAY, SUCH AS THE X-51
22 HYPERSONIC RESEARCH AIRPLANE.

23 Q WHICH I BELIEVE IS YOUR NEXT SLIDE. BUT
24 BEFORE WE LEAVE THIS SLIDE, WHAT IS THE DATE OR THE AGE
25 OF THIS PICTURE?

26 A THIS SLIDE IS I WOULD SAY APPROXIMATELY
27 FOUR YEARS OLD, THREE TO FOUR YEARS OLD.

28 Q NEXT SLIDE, PLEASE.

1 WHAT IS THIS PLANE, BEFORE WE TALK ABOUT
2 IT?

3 **A** THE PLANE IS A VENERABLE AIRCRAFT, BUT IT'S
4 ONE THAT'S GOING TO BE IN THE AIR FORCE SERVICE TILL
5 ABOUT 2040. IT'S A BOEING B-52, WHICH WAS ITSELF AN
6 AIRCRAFT THAT WAS FLIGHT TESTED AT EDWARDS.

7 **Q** WHAT IS THE DATE OF THIS PHOTO?

8 **A** THIS PHOTO IS MAY 2010.

9 **Q** WHY DID YOU SELECT THIS PHOTO?

10 **A** ACTUALLY, I TAKE THAT BACK. I CORRECT THE
11 RECORD. THIS IS MAY 2013, THIS PARTICULAR PHOTO.

12 **Q** 2013.

13 **A** 2013. THE REASON I SELECTED THIS PHOTO IS
14 THIS LITTLE ELEMENT HERE. IF WE CAN BRING THAT OUT MORE
15 STRONGLY. THIS IS A -- WHAT LOOKS LIKE A MISSILE. THIS
16 IS ACTUALLY A HIGHLY SOPHISTICATED, AIR BREATHING
17 RESEARCH VEHICLE CALLED A SCRAMJET. THAT STANDS FOR
18 SUPERSONIC COMBUSTION SCRAMJET.

19 THIS VEHICLE DEMONSTRATED A ACCELERATING
20 FLIGHT USING AN AIR BREATHING, HYPERSONIC ENGINE, TO
21 OVER FIVE TIMES THE SPEED OF SOUND. WHAT IS IMPORTANT
22 HERE IS THAT THIS REPRESENTS THE FUTURE OF HIGH SPEED
23 FLIGHT.

24 IT WAS UNDERTAKEN AT EDWARDS, ONCE AGAIN,
25 BECAUSE THAT WAS THE ONLY REASONABLE, SAFE TEST
26 ENVIRONMENT IN WHICH THIS AIRCRAFT COULD BE OPERATED.
27 YOU HAD THE FLIGHT TEST ESTABLISHMENT. YOU HAD THE
28 RANGE CAPABILITIES. YOU HAD THE ABILITY TO HAND THIS

1 OFF BETWEEN VARIOUS PARTNERS AND CONDUCT A FLIGHT TEST
2 OVER THE PACIFIC MISSILE RANGE. ALL THIS CAME TOGETHER
3 TO GENERATE A MILESTONE BREAKTHROUGH IN FLIGHT.

4 IF WE TAKE A LOOK AT WHERE THIS FITS WITHIN
5 THE HISTORY OF FLIGHT, I THINK WE CAN PUT THIS IN THE
6 CONTEXT OF MOBILITY RATES.

7 IF WE COULD HAVE THE NEXT SLIDE.

8 WHAT STRIKES ME AS A HISTORIAN WHO'S LOOKED
9 AT AEROSPACE TECHNOLOGY IS THE IMPACT, THE DEVELOPMENT
10 OF BOEING OVER TIME. WE ENTERED THE 19TH CENTURY AT
11 6 MILES AS HOUR, THE SPEED OF A STEAM LOCOMOTIVE.

12 Q DR. HALLION, LET ME INTERRUPT YOU JUST FOR
13 ONE MOMENT.

14 A YES.

15 MR. LEININGER: THIS IS EXHIBIT 260, YOUR HONOR,
16 AND BATES NUMBER ON THIS EXHIBIT IS U.S.A.F. 051949.

17
18 (EXHIBIT 260, IDENTIFIED: [AS
19 DESCRIBED HEREIN.])

20
21 MR. LEININGER: SORRY. WE HAD LEFT THE PREVIOUS
22 EXHIBITS. THIS IS THE LAST EXHIBIT.

23 THE WITNESS: WE ENTERED THE 19TH CENTURY AT
24 6 MILES AN HOUR, THE SPEED OF A HORSE-DRAWN VEHICLE. WE
25 ENTERED THE -- THINK MILITARY MOBILITY IN THOSE TERMS.
26 WE ENTERED THE 20TH CENTURY AT THE SPEED OF ABOUT
27 60 MILES AN HOUR, THE STRATEGIC MOBILITY OF THE
28 RAILROAD. WE ENTERED THE 21ST CENTURY AT 600 MILES AN

1 HOUR, THE SPEED OF THE INTERCONTINENTAL JET AIRLINE OR
2 JET AIR LIFTER.

3 WE ARE LIKELY TO ENTER -- WE ARE ON TRACK
4 TO ENTER THE NEXT CENTURY AT 6,000 MILES PER HOUR, THE
5 SPEED OF A HYPERSONIC GLOBAL RANGING VEHICLE. IF IT IS
6 THE UNITED STATES THAT ACHIEVES THAT, ALMOST CERTAINLY
7 THAT VEHICLE WILL BE DEVELOPED AND EXPLOITED AND TESTED
8 AT EDWARDS AIR FORCE BASE, PRECISELY BECAUSE IT HAS THE
9 QUALITIES THAT IT HAD AND DEMONSTRATED DURING THE FIRST
10 CENTURY OF FLIGHT, THE UNIQUENESS OF THE LAKE, THE VAST
11 SPACE OF THAT REGION, AND THE WONDERFUL FLYING
12 CONDITIONS THAT YOU HAVE VIRTUALLY YEAR-ROUND.

13 **BY MR. LEININGER:**

14 Q SO I THINK YOU JUST ANSWERED THE LAST
15 QUESTION. SO THAT IS YOUR OPINION WITH REGARD TO THE
16 FUTURE CAPABILITIES OF EDWARDS AIR FORCE BASE?

17 A YES. EDWARDS AIR FORCE BASE HAS BEEN THE
18 BASE THAT WE HAVE BUILT AMERICAN MILITARY AIRPOWER, AND
19 IT WILL CONTINUE TO BE IF WE ARE GOOD CUSTODIANS OF THAT
20 BASE.

21 **MR. LEININGER:** NO FURTHER QUESTIONS, YOUR HONOR.

22 **THE COURT:** ALL RIGHT. THANK YOU.

23 ALL RIGHT. WHO IS GOING TO
24 DO CROSS-EXAMINATION? MR. ZIMMER.

25
26 **CROSS-EXAMINATION**

27 **BY MR. ZIMMER:**

28 Q GOOD MORNING, DR. HALLION. HOW ARE YOU?

1 **A** GOOD MORNING. THANK YOU VERY MUCH. FINE.

2 **Q** THAT'S FASCINATING STUFF.

3 **A** THANK YOU.

4 **Q** I FOUND PARTICULARLY INTERESTING THE
5 SHOOTING THROUGH THE PROPELLERS. I WAS THINKING ABOUT
6 BEING IN ONE OF THOSE PLANES, WONDERING WHETHER THE
7 PROPELLER WAS REALLY SYNCHRONIZED CORRECTLY.

8 **A** VERY OFTEN IT WASN'T.

9 **Q** NOTWITHSTANDING MY INTEREST IN MANY THINGS
10 YOU WOULD HAVE TO SAY, I'M GOING TO TRY AND KEEP MY
11 QUESTIONS TO YOU KIND OF DRY AND BLAND PROBABLY FROM
12 YOUR PERSPECTIVE --

13 **A** OKAY.

14 **Q** -- BUT SOME THINGS THAT WE NEED TO KNOW FOR
15 OUR CASE.

16 I THINK YOU DESCRIBE YOURSELF IN YOUR
17 DEPOSITION AS A PLANE GUY PRIMARILY. DO YOU RECALL
18 THAT?

19 **A** UH-HUH.

20 **Q** IT'S OBVIOUS --

21 **A** YES, I DO.

22 **Q** -- YOU HAVE A LOT OF KNOWLEDGE IN AIRPLANES
23 AND DEVELOPMENT OF THE AIRPLANES.

24 I THINK IT'S FAIR TO SAY THAT HOW THE BASE
25 HAS BEEN USED OVER THE YEARS HAS CHANGED SUBSTANTIALLY.

26 **A** NO, I WOULD DISAGREE.

27 **Q** VERY WELL. IN THE BEGINNING, IT WAS USED
28 AS A BOMBING AND GUNNERY RANGE; TRUE?

1 **A** NOT EXCLUSIVELY.

2 **Q** BUT THEY DID USE IT, AS IT WAS ORIGINALLY
3 RESERVED, AS A BOMBING AND GUNNERY RANGE WE HEARD
4 YESTERDAY.

5 **A** THAT WAS ONE OF THE PURPOSES, BUT VIRTUALLY
6 FROM THE BEGINNING YOU STARTED TO HAVE TRAINING IN THE
7 SENSE OF MILITARY MANEUVERS. YOU HAD TESTING OF NEW
8 WEAPONS AND TACTICS. SO I WOULD -- YOU KNOW, TO THINK
9 OF THIS AS A DRY, NO PUN INTENDED, STRETCH OF LAND
10 THAT'S JUST OPEN, THAT PEOPLE FLY OVER, DROP BOMBS,
11 STRAFE, I THINK THAT REALLY IS ADOPTING A VIEW THAT'S
12 TOO NARROW OF A SCOPE.

13 **Q** YOU DID TESTIFY, SIR, IN YOUR DEPOSITION
14 THAT IT WAS ORIGINALLY USED FOR BOMBING AND GUNNERY AND
15 THAT THE AERONAUTICS ASPECT OF IT, AT LEAST FROM A
16 MILITARY STANDPOINT, DID NOT DEVELOP UNTIL LATER.

17 **A** I THINK WE WERE TALKING THERE ABOUT THE
18 FLIGHT TESTING, BECAUSE I RECALL THE THRUST OF THAT
19 QUESTION WAS GOING TOWARDS WHEN DID WE INTRODUCE
20 EXPERIMENTAL FLIGHT TESTING, AND THAT'S WHY IN THIS
21 TESTIMONY WE BROUGHT UP THE NORTHROP FLYING WING. THERE
22 IS A CHANGE TOWARD FLIGHT TESTING IN 1940 WHICH
23 ENCOMPASSES THE NORTHROP FLYING WING, THE DRONE TESTING,
24 THINGS OF THAT SORT.

25 **Q** ALL RIGHT. BECAUSE MR. JOYCE ASKED YOU IN
26 YOUR DEPOSITION THAT IF YOU WERE BOMBING THESE DRY
27 LAKES, IT WOULDN'T NECESSARILY BE GOOD FOR LANDING
28 AIRCRAFT, AND YOU AGREED WITH THAT; CORRECT?

1 **A** THE LAKE IS A VERY LARGE LAKE. YOU
2 WOULDN'T LAND CERTAINLY IN THE MIDDLE OF YOUR BOMB
3 PATTERN, BUT THAT DID NOT MEAN THAT YOU COULD NOT LAND
4 ON THE LAKE.

5 AND REMEMBER, THE BOMBS WE'RE TALKING ABOUT
6 ARE PRACTICE BOMBS. WE'RE NOT TALKING ABOUT 2000-POUND
7 BOMBS OR THINGS LIKE THAT. WE'RE TALKING ABOUT BOMBS
8 THAT ARE PERHAPS 25 POUNDS.

9 **Q** AT YOUR DEPOSITION, YOU SAID THAT EDWARDS
10 CAME INTO PLAY WITH MUROC IN 1944.

11 **A** I THINK -- I'M NOT CERTAIN THE -- THE
12 CONTEXT IN WHICH THAT WAS ASKED. I THINK PERHAPS THAT
13 WAS REFERRING TO WHEN WE SAW THE INTRODUCTION OF THE
14 P-80 FLIGHT TEST PROGRAM AT MUROC, WHICH WAS THE FIRST
15 COMBAT-WORTHY JET AIRCRAFT.

16 **Q** YEAH. I THINK WHAT YOU SAID WAS WHERE
17 EDWARDS CAME INTO PLAY -- WHERE MUROC, THEN EDWARDS CAME
18 INTO PLAY WAS IN 1944. WE HAD A DECISION TO REACH TO
19 ESTABLISH A TRANSONIC RESEARCH AIRCRAFT PROGRAM. IS
20 THAT CORRECT?

21 **A** THAT RELATES TO THE EVOLUTION OF THE X-1
22 RESEARCH AIRCRAFT PROGRAM THAT YOU SAW PRESENTED THIS
23 MORNING. THERE WAS A CONFERENCE ON MARCH 16, 1944, THAT
24 LAUNCHED THAT PROGRAM. BUT AS I SAID, WHEN THAT PROGRAM
25 WAS ORIGINALLY DEVELOPED, THE INTENT WAS TO USE IT FROM
26 LANGLEY FIELD AND PERHAPS WRIGHT FIELD, OHIO.

27 WHAT WE CAME TO APPRECIATE VERY QUICKLY WAS
28 THAT THAT AIRCRAFT, FOR SAFETY REASONS, HAD TO BE FLOWN

1 AT EDWARDS. AND SO WE CAN DATE, IF YOU WILL, THE ONSET
2 OF THE SUPERSONIC RESEARCH AIRCRAFT PROGRAM 1944, WHICH
3 MEANS THAT THE CLOCK WAS TICKING AT THAT POINT TOWARDS
4 EDWARDS' ULTIMATE INVOLVEMENT IN THE PROGRAM.

5 Q YOU WOULD AGREE, SIR, THAT IN 1933 THEY
6 CERTAINLY DID NOT INTEND TO USE THE FIELD FOR A SPACE
7 SHUTTLE?

8 A I WOULD SAY THAT THE LEADERSHIP AT THAT
9 TIME, HAVING READ -- HAVING GONE EXTENSIVELY THROUGH HAP
10 ARNOLD'S --

11 Q I DON'T WANT YOU TO SPECULATE. I WANT TO
12 KNOW WHETHER THERE'S ANYTHING IN YOUR HISTORICAL RECORD
13 THAT SHOWS IN 1933 THEY INTENDED TO LAND A SPACE SHUTTLE
14 THERE.

15 A BY 1933, PEOPLE WERE SPECULATING ABOUT
16 SPACE SHUTTLES. IT WAS A POPULAR --

17 Q THAT WASN'T MY QUESTION, ABOUT SPECULATING.
18 WAS THERE ANYTHING IN THE HISTORICAL RECORD THAT
19 INDICATES THEY INTENDED TO LAND A SPACE SHUTTLE ON
20 EDWARDS DRY LAKE IN 1933?

21 A NO.

22 Q AND THAT WOULD BE TRUE AS TO SUPERSONIC OR
23 HYPERSONIC, SUPERSONIC AIRCRAFT, BECAUSE THEY DIDN'T
24 EXIST EITHER; CORRECT?

25 A THAT IS TRUE, BUT I WOULD OFFER THE
26 FOLLOWING THOUGHT: CERTAINLY, WE ARE NOT SUGGESTING
27 THAT, WHEN WE DEVELOP A CAPABILITY AT A BASE, WE ARE
28 TAKING A LOOK AT A SLICE IN TIME AND NOT FEELING THAT

1 THE TECHNICAL FIELD THAT THE BASE IS INVOLVED WITH IS
2 DYNAMIC. AVIATION IS A DYNAMIC PROCESS.

3 THE PEOPLE WHO -- HAP ARNOLD HAD LEARNED TO
4 FLY WITH THE WRIGHT BROTHERS IN A PUSHER BIPLANE. BY
5 THE EARLY 1930S, HE'S LEADING ALL-METAL, MONOPLANE
6 BOMBERS ON A FLIGHT TO ALASKA. HE HAS SEEN THE
7 EVOLUTION OF FLIGHT. HE WOULD CLEARLY RECOGNIZE -- THE
8 PEOPLE AT THAT TIME TOOK IT AS A GIVEN. YOU SEE THIS IN
9 THEIR PAPERS. YOU SEE THIS IN THEIR DOCUMENTS. THEY
10 ACCEPT AS A GIVEN THAT THERE WILL BE A STEADY
11 ADVANCEMENT IN THE CAPABILITIES OF FLIGHT.

12 I THINK THAT THEY WOULD NOT HAVE -- THEY
13 MAY NOT HAVE ENVISIONED A SPACE SHUTTLE, BUT THEY
14 CERTAINLY DID NOT THINK THAT EDWARDS WOULD BE FURTHER
15 CONSTRAINED TO OPERATING A KIND OF TECHNOLOGY THAT THEY
16 WERE OPERATING AT THAT TIME.

17 Q BUT SO WHAT YOU SAID WAS YOU WOULD TAKE IT
18 A SLICE IN TIME; SO AT ANY GIVEN TIME THE AIR FORCE
19 WOULD LOOK AT THE BASE AND USE IT FOR WHAT PURPOSE THEY
20 NEEDED AT THAT TIME?

21 A AT ANY GIVEN TIME, THE STATE OF THE
22 TECHNOLOGY INVOLVES CERTAIN PARAMETERS OF AIRCRAFT
23 PERFORMANCE. IN 1944, WE'RE DEALING WITH SUBSONIC
24 AIRPLANES. IN 1954, WE'RE DEALING WITH SUPERSONIC
25 AIRPLANES. IN 1964, WE HAVE THE FIRST HYPERSONIC
26 AIRCRAFT.

27 YOU KNOW, SO AT ANY GIVEN TIME THERE, YOU
28 KNOW, ARE WE TO THINK THAT, YOU KNOW, WE WOULD DRAW A

1 LINE THEN AND LIMIT THAT, YOU KNOW, LIMIT THE FUTURE
2 EXPRESSION OF THAT TECHNOLOGY OR HOW THAT TECHNOLOGY
3 EVOLVED?

4 FOR EXAMPLE, DRONES. WE DID NOT ENVISION
5 DRONES BEING AS BIG, AS SOPHISTICATED, OR AS COMPLEX AS
6 THEY ARE TODAY WHEN WE DID OUR FIRST LITTLE, INITIAL
7 EXPERIMENTS TO WHAT WERE ESSENTIALLY LITTLE MORE THAN
8 MODEL AIRPLANES AT THAT TIME IN 1940, AND YET NOW WE
9 HAVE DRONES THAT ARE AS BIG AS COMMERCIAL AIRLINERS.

10 Q SO THEY WOULD USE IT FOR WHAT THEY NEEDED
11 AT ANY GIVEN TIME; IS THAT CORRECT?

12 A I THINK THAT WOULD BE A CORRECT WAY OF
13 LOOKING AT IT.

14 Q LET ME MOVE TO SOMETHING --

15 A THE MILITARY DETERMINES REQUIREMENTS. THE
16 MILITARY DETERMINES WHAT IT NEEDS TO ACHIEVE AND THEN
17 SEEKS WEAPON SYSTEMS AND TECHNICAL ATTRIBUTES THAT
18 ENABLES IT TO DO SO.

19 THE COURT: ALL RIGHT. NEXT QUESTION.

20 MR. ZIMMER: THANK YOU, YOUR HONOR.

21 BY MR. ZIMMER:

22 Q LET ME TURN TO THIS. YOU TESTIFIED THAT
23 MUROC WAS EXTREMELY ATTRACTIVE BECAUSE OF THREE
24 QUALITIES: ONE, THEY HAD AN EXTRAORDINARILY DRY LAKE
25 THAT ENABLED IT TO OPERATE EXPERIMENTAL AIRCRAFT AND
26 RECOVER THEM ON A 64 SQUARE MILE LAKE BED; TWO, IT HAD
27 TREMENDOUS WEATHER; AND, THREE, IT WAS REMOTE.

28 A THAT YOU HAVE VAST OPEN SPACE, I THINK I

1 ALSO MENTIONED THAT AS WELL.

2 Q THE SPACE?

3 A THAT IT HAD VAST OPEN SPACE. YOU HAD VAST
4 OPEN AREA, BOTH A BLOCK OF AIR SPACE, A BLOCK OF LAND
5 OVER WHICH YOU CAN OPERATE. AND THEN THE LAKE ITSELF,
6 NOT JUST LOOKING AT THE CONSTRAINTS OF THE GEOGRAPHICAL
7 OUTLINE OF THE LAKE, BUT THE LAKE ITSELF, OF COURSE,
8 GIVES YOU THIS LANDING AREA. BUT BEYOND THAT YOU HAVE
9 THE WHOLE MOJAVE OF THAT REGION OF THE ANTELOPE VALLEY.

10 Q SO IN TERMS OF THE DRY LAKE ITSELF, IT'S
11 EXTREMELY HARD?

12 A RIGHT.

13 Q AND SO YOU DON'T HAVE TO PAVE IT?

14 A I'M SORRY.

15 Q YOU DON'T HAVE TO PAVE IT?

16 A YOU DON'T REALLY HAVE TO PAVE IT, ALTHOUGH
17 IF YOU'RE DOING ROUTINE AIRCRAFT OPERATIONS OVER THE
18 SAME TRACT OVER AND OVER AGAIN, LIKE YOU WOULD ON DAILY
19 OPERATIONS, THEN YOU WOULD NEED TO HAVE SOME SORT OF
20 PREPARED SURFACE, WHICH IS WHY WE HAD THE INTRODUCTION
21 OF A HARD RUNWAY IN THE 1940, '41 TIME PERIOD.

22 Q BUT IN TERMS OF THE SELECTION OF THAT LAKE
23 BED, IT WAS SELECTED BECAUSE IT WAS HUGE, IT WAS VERY
24 DRY, IT WAS VERY HARD, AND PLANES COULD LAND THERE?

25 A YES.

26 Q AND IT WOULDN'T BE DRY IF THERE WAS WATER
27 THERE.

28 A THERE IS WATER THERE, BUT THE WATER -- AS

1 YOU KNOW, YOU GET WINTER RAINS. THE RAINS BLOW BACK AND
2 FORTH, ARE BLOWN BACK AND FORTH OVER THE LAKE SURFACE.
3 IT SMOOTHS THE LAKE. AND THEN THAT WATER EITHER
4 EVAPORATES OR IT DISAPPEARS INTO THE WATER TABLE. AND
5 THAT IS THE SUM KNOWLEDGE OF MY EXPERTISE IN WATER.

6 Q WE DON'T NEED TO GO THERE. LET'S TALK
7 ABOUT THE SECOND ASPECT, THE FACT THAT IT HAD TREMENDOUS
8 WEATHER.

9 A YES.

10 Q THAT'S ALSO BECAUSE IT DOESN'T RAIN VERY
11 MUCH THERE; RIGHT?

12 A I'M NOT --

13 Q SELECTED BECAUSE IT DOESN'T RAIN VERY MUCH
14 THERE?

15 A I'M NOT A METEOROLOGIST. I THINK IT'S
16 PROBABLY A VARIETY OF FACTORS, INCLUDING THE PROXIMITY
17 TO THE L.A. HILLS AND THE SAN GABRIELS. SO IT'S MORE
18 THAN JUST THE RAIN ISSUE. I THINK IT'S A WEATHER
19 PATTERN ISSUE AS WELL. BUT THAT'S -- AGAIN, THAT'S AN
20 AREA THAT I HAVE TO BE VERY CAREFUL TRAIPSING INTO.

21 Q THE THIRD IMPORTANT FACTOR YOU SAID WAS
22 BECAUSE IT WAS REMOTE.

23 A YES.

24 Q AND THAT IS PROBABLY FOR TWO REASONS: ONE,
25 IT'S REMOTE, SO YOU DON'T HAVE TO CRASH AN AIRPLANE ON
26 PEOPLE'S HOUSES, BUT ALSO, AS YOU POINTED OUT IN YOUR
27 TESTIMONY, BECAUSE OF THE SECRECY. YOU DON'T WANT
28 PEOPLE SEEING WHAT YOU'RE DOING OUT THERE IN TERMS OF

1 TESTING THESE EXPERIMENTAL AIRCRAFT; TRUE?

2 **A** THAT'S TRUE. YEAH, THAT'S TRUE. THERE --
3 I WOULD SAY THAT THAT WAS VERY TRUE AT THE TIME OF THE
4 SECOND WORLD WAR, WHEN WE WERE DEALING WITH WHAT WE SAW
5 AS POTENTIALLY PIVOTAL TECHNOLOGIES LIKE THE JET ENGINE,
6 AND IT'S TRUE TO A DEGREE TODAY.

7 **Q** AND YOU BROUGHT UP WORLD WAR II. IT'S
8 CLEAR THAT OVER TIME THE EXTENT TO WHICH THE BASE HAS
9 BEEN USED HAS CHANGED. I THINK YOU SAID IT BOOMED WITH
10 WORLD WAR II, WHAT WAS HAPPENING AT THE BASE.

11 **A** IT --

12 **Q** IS THAT TRUE?

13 **A** IT EXPLODED. AS I SAID, IT EXPLODED IN
14 SIZE. IT WENT TO 40,000 PEOPLE, WHICH WAS ALMOST THREE
15 TIMES WHAT THE ENTIRE SIZE OF THE AIR CORPS HAD BEEN IN
16 THE 1930S, BUT THAT DOESN'T REPRESENT A CHANGE IN WHAT
17 THE BASE IS DOING. IT JUST MEANS YOU HAVE MANY MORE
18 PEOPLE AND MANY MORE ACTIVITIES, DOING THE SAME THINGS
19 THAT BASICALLY THEY'VE ALWAYS DONE.

20 AS THE AIR FORCE RISES AND FALLS IN SIZE,
21 YOU DON'T SEE THINGS BEING TAKEN AWAY FROM MUROC IN
22 THOSE DAYS AND EDWARDS LATER. YOU FIND THEY'RE DOING
23 THE SAME SORTS OF ACTIVITIES. YOU'RE DOING TRAINING.
24 YOU'RE DOING OPERATIONAL DEPLOYMENTS OF AIRCRAFT IN
25 WORLD WAR II, WHEN YOU FLEW 97 SORTIES FROM EDWARDS.

26 AND THAT MAY SOUND FOOLISH. WHO WAS
27 WORRIED ABOUT SUBMARINES IN 1942? WELL, WE MUST
28 REMEMBER THAT SANTA BARBARA WAS SHELLLED BY A JAPANESE

1 SUBMARINE IN 1942. SO THERE WAS A REAL INTEREST HERE IN
2 EDWARDS BEING A FULL SERVICE, IF YOU WILL, MILITARY
3 BASE.

4 Q YOU TESTIFIED, DIDN'T YOU, THAT YOU FOUND
5 NO EVIDENCE THAT THE ARMY AIR CORPS SPECIFICALLY THOUGHT
6 THAT MUROC DRY LAKE IN THE 1930 TIME PERIOD AS BEING A
7 POTENTIAL FLIGHT TEST CENTER?

8 A I'M NOT SURE I RECALL SAYING THAT,
9 ACTUALLY. I WOULD LIKE TO TAKE A LOOK AT THE --

10 MR. ZIMMER: APPROACH THE WITNESS, YOUR HONOR?

11 THE WITNESS: -- DEPOSITION.

12 THE COURT: GO AHEAD.

13 BY MR. ZIMMER:

14 Q SEE IF THIS REFRESHES YOUR RECOLLECTION.
15 PAY NO ATTENTION TO ALL MY HIGHLIGHTING (INDICATING).

16 MR. LEININGER: COULD WE HAVE THE PAGE? EXCUSE
17 ME, YOUR HONOR.

18 MR. ZIMMER: IT'S -- LET ME HAVE THE WITNESS READ
19 IT, AND THEN I'LL ...

20 MR. LEININGER: YOUR HONOR, MAY WE HAVE ONE MOMENT
21 WHILE WE RETRIEVE OUR COPY?

22 THE COURT: YES. GO AHEAD.

23 MR. ZIMMER: IT'S PAGE 35, LINES 7 THROUGH 10.

24

25 (PAUSE IN THE PROCEEDINGS.)

26

27 MR. LEININGER: PAGE 35?

28 MR. ZIMMER: YEP.

(COUNSEL SPOKE SOTTO VOCE.)

THE COURT: GO AHEAD.

BY MR. ZIMMER:

Q SIR, YOU DID TESTIFY TO THAT; CORRECT?

A YEAH. AND THERE'S A STRAIGHTFORWARD EXPLANATION OF THAT. THE FLIGHT TEST CENTER, THE OFFICIALLY DESIGNATED FLIGHT TEST CENTER FOR THE ARMY AIR SERVICE, LIKE THE ARMY AIR CORPS IN THE 1920S AND 1930S, WAS AT WRIGHT FIELD, OHIO.

WE MUST REMEMBER, THEN AS NOW, THAT THE AIR FORCE AND ITS PREDECESSORS, THE AIR CORPS, THE ARMY AIR FORCES, THE ARMY AIR SERVICE BEFORE THAT, UNDERTAKE A VARIETY OF TESTING AT MANY DIFFERENT INSTALLATIONS AND BASES. WE HAD ONE PRIMARY FLIGHT TEST CENTER, AND THAT WAS WRIGHT FIELD, OHIO, IN THE 1920S AND 1930S.

AS THE TECHNOLOGY EVOLVED, WE SAW -- AFTER WORLD WAR II WE SAW EDWARDS EMERGE AS THE AIR FORCE FLIGHT TEST CENTER, BUT THAT DID NOT MEAN THAT AT THAT TIME OR ANY PREVIOUS TIME THAT THERE WAS NOT TESTING TAKING PLACE AT MUROC OR, FOR THAT MATTER, ANY OTHER OF THE ARMY AIR CORPS, ARMY AIR SERVICE BEFORE THAT, ARMY AIR FORCES LATER, BASES SUCH AS THE COOK FIELD -- SUCH AS, I SHOULD SAY, MITCHELL FIELD, LONG ISLAND OR LANGLEY FIELD, WHERE WE UNDERTOOK TESTING OF BOMBERS, OR EGLIN FIELD IN FLORIDA, WHERE WE WERE DOING WEAPONS TESTING AND WE WERE DOING TACTICS DEVELOPMENT. TESTING TAKES

1 PLACE THROUGHOUT THE SERVICE.

2 SO THE FACT THAT IT WAS NOT YET DESIGNATED
3 AS THE CENTRAL FLIGHT TEST CENTER FOR THE AIR SERVICE,
4 AIR CORPS, AIR FORCES BEFORE WE HAD THE POST WAR
5 EVOLUTION OF EDWARDS AIR FORCE BASE, THAT REALLY,
6 FRANKLY, MEANS VERY, VERY LITTLE, BECAUSE WE HAD SO MUCH
7 OTHER TESTING GOING ON.

8 IT WAS COMPLETELY CONSISTENT THAT, FOR
9 EXAMPLE, IN THE LATE 1930S YOU FIND THAT WE HAD THIS --
10 THIS -- THESE TRIALS OF ANTIAIRCRAFT GUN CREWS EXPLORING
11 HOW TO DEFEND AGAINST AIR ATTACK. IT WAS VERY
12 CONSISTENT WITH THE TRAINING THAT WAS BEING DONE AT THAT
13 TIME. TRAINING AND TESTING GO HAND AND HAND. THEY'RE
14 NOT THE SORT OF THINGS THAT YOU CAN READILY AND EASILY
15 DIVIDE.

16 Q I'M GOING TO TRY AND MOVE THROUGH THIS A
17 LITTLE -- FAIRLY QUICKLY. I KNOW THAT YOU HAVE A LOT OF
18 KNOWLEDGE AND YOU WANT TO EXPLAIN EVERYTHING. I'M GOING
19 TO TRY AND GET SOME ANSWERS, AND YOUR LAWYERS CAN COME
20 BACK TO SOME EXTENT IF THEY WANT TO.

21 I WANT TO TALK TO YOU ABOUT A QUOTE OUT OF
22 YOUR BOOK.

23 A UH-HUH.

24 Q YOU WROTE A BOOK CALLED *ON THE FRONTIER*.

25 A YES.

26 Q AND YOU QUOTED THAT BOOK IN YOUR
27 DEPOSITION --

28 A YES.

1 **Q** -- IN YOUR DEPOSITION, AT PAGE 37, ON
2 LINES 22 THROUGH 25, FROM PAGE 16 OF YOUR BOOK. AND YOU
3 SAID, QUOTE, "THE CHARACTER OF OPERATIONS AT MUROC
4 CHANGED. WHAT HAD BEEN A USEFUL BOMBING AND GUNNERY
5 SITE NOW BECAME A REMOTE TESTING SITE."

6 DID YOU TESTIFY TO THAT?

7 **A** I WOULD LIKE TO SEE THE SECTION OF THE BOOK
8 IF YOU HAVE IT.

9 **Q** I DON'T HAVE THE BOOK, BUT I HAVE YOUR
10 TESTIMONY ON IT.

11 **A** WELL, I'LL ADDRESS IT THIS WAY: IN THE
12 BROADEST SENSE --

13 **Q** WELL, I'M NOT ASKING YOU TO EXPLAIN IT.
14 I'M JUST ASKING DID YOU TESTIFY TO THAT?

15 **MR. DUNN:** OBJECTION, YOUR HONOR.

16 **THE WITNESS:** I DON'T RECALL TESTIFYING TO THAT.

17 **MR. DUNN:** OBJECTION, YOUR HONOR. THIS IS
18 IMPROPER QUESTIONING OF A WITNESS USING DEPOSITION
19 TESTIMONY FOR IMPEACHMENT. IT REALLY IS BADGERING THE
20 WITNESS. THE DEPOSITION TESTIMONY HAS BEEN PRESENTED.
21 THERE'S NO FURTHER QUESTION TO OFFER AS TO WHETHER OR
22 NOT HE TESTIFIED TO IT. HE DID. IT'S THERE.

23 **THE COURT:** I'M GOING TO OVERRULE THAT OBJECTION.
24 HE CAN ASK HIM WHAT HIS TESTIMONY IS TODAY BASED UPON
25 WHAT HE SAID AT A PRIOR OCCASION.

26 **MR. ZIMMER:** IF I COULD REFRESH YOUR MEMORY, YOUR
27 HONOR.

28 **THE WITNESS:** THAT'S -- IN THE BROADEST SENSE I --

1 **BY MR. ZIMMER:**

2 **Q** DID YOU TESTIFY TO THAT?

3 **A** I DID TESTIFY TO THAT, AND I WOULD ACCEPT
4 THAT. I THINK IN THE BROADEST SENSE THAT IS ACCURATE,
5 BUT THAT DOES NOT MEAN THAT THERE WERE NOT MANY OTHER
6 THINGS GOING ON.

7

8 (PAUSE IN THE PROCEEDINGS.)

9

10 **BY MR. ZIMMER:**

11 **Q** IS IT TRUE THAT PLANT 42 IS PREDOMINANTLY A
12 CIVILIAN, FOR PROFIT FACILITY?

13 **A** I DON'T REALLY HAVE -- I DON'T REALLY HAVE
14 THE SPECIFIC ADMINISTRATIVE BACKGROUND TO ADDRESS THAT.
15 CERTAINLY, THERE ARE CONTRACTORS THERE WORKING ON A AIR
16 FORCE PLANT. PRESUMABLY, THEY'RE IN PROFIT MAKING
17 BUSINESS. BUT I WOULD DEFER TO MY COLLEAGUE WHO HAS
18 PLANT 42 TO ADDRESS THAT MORE ACCURATELY THAN I CAN.

19 **Q** DID YOU TESTIFY THAT PREDOMINANTLY IT WAS
20 YOUR APPRECIATION THAT A CIVIL, FOR PROFIT PROPERTY
21 OCCUPIED THAT FACILITY?

22 **A** YES.

23 **MR. DUNN:** OB --

24 **THE COURT:** HE JUST SAID YES. IT'S A BELATED
25 OBJECTION.

26 MR. HALLION, YOU MIGHT PAUSE IN YOUR
27 ANSWERS TO GIVE COUNSEL AN OPPORTUNITY TO INTERPOSE
28 OBJECTIONS IF THEY THINK IT APPROPRIATE.

1 **THE WITNESS:** THANK YOU, YOUR HONOR.

2 **THE COURT:** JUST TAKE A BREATH.

3 GO AHEAD, MR. ZIMMER.

4 **BY MR. ZIMMER:**

5 **Q** IT IS TRUE, SIR, THAT YOU DID NOT LOOK AT
6 ANY HISTORICAL DOCUMENTS TO DETERMINE THE RATIONALE OR
7 REASONING WHY THE FEDERAL GOVERNMENT ACQUIRED AN
8 AGGREGATED PROPERTY?

9 **A** NO.

10 **Q** CORRECT?

11 **A** YES, THAT'S CORRECT.

12

13 (PAUSE IN THE PROCEEDINGS.)

14

15 **MR. ZIMMER:** THANK YOU, DOCTOR. I HAVE NO OTHER
16 QUESTIONS.

17 **THE WITNESS:** THANK YOU VERY MUCH.

18 **THE COURT:** WELL, BEFORE WE GET TO REDIRECT, ANY
19 FURTHER CROSS-EXAMINATION? MR. KUHS?

20 **MR. KUHS:** YES.

21

22 **FURTHER CROSS-EXAMINATION**

23 **BY MR. KUHS:**

24 **Q** GOOD MORNING, DR. HALLION. MY NAME IS
25 ROBERT KUHS. I WANTED TO ASK YOU A FEW FOLLOW-UP
26 QUESTIONS.

27 **A** FINE.

28 **Q** ARE YOU FAMILIAR WITH MURPHY'S LAW?

1 **A** YES.

2 **Q** DID YOU KNOW CAPTAIN MURPHY?

3 **A** I DID NOT KNOW CAPTAIN MURPHY. I HAVE
4 HEARD THE STORY THAT MURPHY'S LAW ORIGINATED AT EDWARDS.
5 I CAN'T CONFIRM THAT.

6 **Q** LET ME START WITH YOUR DISCUSSION OF NASA.
7 NASA IS A CIVILIAN ORGANIZATION; CORRECT?

8 **A** YES.

9 **Q** THEY ARE NOT UNDER THE DEPARTMENT OF
10 DEFENSE CONTROL; CORRECT?

11 **A** THAT IS CORRECT.

12 **Q** THEY DON'T DROP LIVE MUNITIONS; CORRECT?

13 **A** I CAN'T CONFIRM THAT. IN THE COURSE OF
14 SOME OF THEIR TESTING, THEY MIGHT. I KNOW THAT IN SOME
15 TESTING THAT NASA HAS DONE THEY HAVE DONE -- THEY HAVE
16 DONE TESTING RELATED TO WEAPON SYSTEM DEVELOPMENT,
17 TRACKING TARGETS, TRYING TO OBTAIN OPTIMUM FIRING
18 SOLUTIONS; SO THAT MAY POSSIBLY HAVE INVOLVED ACTUALLY
19 FIRING ORDNANCE.

20 **Q** DO YOU HAVE ANY PERSONAL KNOWLEDGE THAT ANY
21 ORDNANCE HAS EVER BEEN FIRED BY NASA?

22 **A** I BELIEVE THAT IN THE F-16 XL FLIGHT TEST
23 PROGRAM IN THE 1990S, THAT THERE WAS -- THERE WAS
24 ORDNANCE MOUNTED ON THE AIRCRAFT. NOW, I HAVE TO
25 CONFESS THAT THIS IS A RECOLLECTION FROM YEARS AGO. BUT
26 ASIDE FROM THAT, I CAN'T RECALL -- I CAN'T RECALL OF
27 OTHER CASES.

28 I CAN RECALL THIS: THAT THERE WERE DROP

1 TANKS AND BOMB SHAPES INSTALLED ON NASA RESEARCH
2 AIRPLANES AND, BEFORE THAT, NACA AIRPLANES; AND THAT IN
3 THE 1980S, UNDER THE TACT PROGRAM, THE TRANSONIC
4 AIRCRAFT TECHNOLOGY PROGRAM, WE WERE FLYING A MODIFIED
5 F-111 AIRCRAFT IN A JOINT NASA-AIR FORCE PROGRAM, THAT
6 HAD BOMB PYLONS WITH 500-POUND BOMBS, MACH 82 BOMBS ON
7 IT.

8 NOW, I DO NOT KNOW IF THAT WAS LIVE
9 ORDNANCE. I SUSPECT THAT IT WAS PROBABLY NOT LIVE
10 ORDNANCE, BUT IT WAS DEFINITELY A 500-POUND BOMB.

11 Q ALL RIGHT. APPRECIATE THAT.

12 ONE THING THAT MIGHT HELP MOVE THIS ALONG
13 IS THAT -- IT SOUNDS LIKE YOU'RE SORT OF THINKING
14 THROUGH THE PROCESS ON THE RECORD. AND WHAT MIGHT HELP
15 IS TO HEAR MY QUESTION, UNDERSTAND THE QUESTION, PROCESS
16 THE ANSWER, AND THEN JUST GIVE ME A YES OR NO, IF IT
17 CALLS FOR A YES OR NO. WOULD YOU DO THAT?

18 A I WILL TRY.

19 THE COURT: WELL, JUST A MINUTE. THIS IS NOT A
20 DEPOSITION, COUNSEL. THAT'S AN IMPROPER INSTRUCTION.

21 BY MR. KUHS:

22 Q WHAT YEAR --

23 THE COURT: JUST LISTEN TO THE QUESTION,
24 DR. HALLION, AND ANSWER IT AS BEST YOU CAN. TRY NOT TO
25 GET INTO A NARRATIVE BEYOND THE QUESTION.

26 THE WITNESS: THANK YOU, YOUR HONOR.

27 THE COURT: THANK YOU.

28

1 BY MR. KUHS:

2 Q WHAT YEAR WAS NASA FIRST PRESENT AT EDWARDS
3 AIR FORCE BASE?

4 A 1946. REMEMBER, WHEN YOU TALK ABOUT NASA,
5 YOU CANNOT SEPARATE THE HISTORY OF NASA FROM THE HISTORY
6 OF THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.
7 THERE WAS A NAME CHANGE FOLLOWING THE 1958 NATIONAL
8 SPACE ACT. THERE WAS A NAME CHANGE IN 1959, WHERE THE
9 NACA FACILITIES BECAME THE NASA FACILITIES.

10 BUT IF YOU ARE TRACING WHEN YOU HAD THE
11 PRESENCE OF THAT, IT DATES TO 1949, WHEN A SMALL TEAM OF
12 PEOPLE -- 1946, WHEN A SMALL TEAM OF PEOPLE WERE SENT
13 FROM THE LANGLEY RESEARCH CENTER TO WHAT WAS THEN MUROC,
14 AND THEY WERE LIVING IN MILITARY HOUSING AT THE TIME.

15 Q AND DO YOU KNOW HOW MANY PERSONNEL ARE ON
16 THE BASE TODAY THAT ARE ASSOCIATED WITH NASA?

17 A I DON'T.

18 Q DID NASA ALSO HAVE A JET ENGINE TEST
19 FACILITY?

20 A THEY HAVE HAD -- THEY HAVE DONE ENGINE
21 TESTING AT EDWARDS, BUT IN -- AS I RECALL, TYPICALLY IN
22 RELATION TO A SPECIFIC PROGRAM. FOR EXAMPLE, THEY WERE
23 DOING ENGINE TESTING WHEN I WAS AT EDWARDS, ON THE YF-12
24 BLACKBIRD PROGRAM, WHICH WAS ONE OF THE MACH 3 RESEARCH
25 AIRPLANES THAT THEY HAD.

26 THEY WERE DOING -- THEY WERE DOING A GREAT
27 AND HAVE DONE A GREAT DEAL OF IN-FLIGHT TESTING OF
28 DIGITAL ELECTRONIC ENGINE CONTROLS UNDER A JOINT AIR

1 FORCE-NASA PROGRAM, USING A MODIFIED F-15 AIRCRAFT, AND
2 THAT WOULD HAVE INVOLVED ENGINE RUNS ON THE GROUND,
3 CALIBRATION RUNS, TOGETHER WITH FLIGHT TEST
4 DEMONSTRATIONS OF THAT ENTRY IN FLIGHT.

5 BUT BEYOND THAT I DON'T -- I HAVE TO
6 CONFESS I DO NOT KNOW OF A SPECIFIC DESIGNATED TEST
7 FACILITY OR TEST CELL OR WHATNOT THAT IS DEVOTED JUST TO
8 ENGINE TESTING.

9 Q IN REFERENCE TO PLANT 42 AND THE
10 RELATIONSHIP WITH EDWARDS, YOU USED A NUMBER OF PHRASES
11 LIKE NEXUS AND PARTNERSHIP. WERE YOU USING THOSE TERMS
12 NOT IN A LEGAL SENSE BUT SIMPLY TO SHOW A LEVEL OF
13 COOPERATION BETWEEN THOSE TWO FACILITIES?

14 A I'M NOT A LAWYER; SO I WOULD NOT BE ABLE TO
15 DEFINE WHAT CONSTITUTES THAT DEFINITION IN A LEGAL
16 SENSE. SO I WAS JUST LOOKING AT THE MACRO, IF YOU WILL,
17 OVERVIEW, A 40,000-FOOT VIEW OF THE RELATIONSHIP BETWEEN
18 PLANT 42 AND EDWARDS.

19 Q YOU QUOTED SOME FIGURES EARLY ON. I THINK
20 YOU SAID AT ONE STAGE IN 1936 THERE WAS APPROXIMATELY
21 1,400 AIRCRAFT AT EDWARDS AIR FORCE BASE.

22 A NO. I WAS REFERRING TO THE TOTAL SIZE OF
23 THE ARMY AIR CORPS AT THAT TIME, AND THE TOTAL SIZE OF
24 THE ARMY AIR CORPS AT THAT TIME WAS ROUGHLY 14,000
25 PEOPLE AND 1,400 AIRPLANES.

26 IT'S FUNNY THAT IT SEEMS TO BE A RELATIVELY
27 CONSISTENT 10-TO-1 RELATIONSHIP IN PERSONNEL VERSUS
28 AIRCRAFT IN THIS TIME. THE NUMBER LEAPT TO ABOUT 26,000

1 PEOPLE AND 2,200 AIRPLANES ON THE ROAD TO WORLD WAR II.

2 AND THEN, OF COURSE, IN WORLD WAR II WE
3 WOUND UP WITH A NATION THAT PRODUCED 300,000 AIRPLANES
4 BEFORE THE END OF THE WAR; SO THE NUMBERS OF AIRCRAFT
5 AND MILITARY SERVICE JUMPED BY THE TENS OF THOUSANDS.

6 Q SO I THINK, AGAIN, I NEED YOU TO LISTEN TO
7 MY QUESTION. DO YOU KNOW HOW MANY AIRCRAFT WERE
8 STATIONED AT EDWARDS AIR FORCE BASE IN 1936?

9 A I DON'T.

10 Q YOU MENTIONED THAT IN 1941 THERE WAS A
11 MASSIVE BUILDUP, SOME 40,000 PEOPLE. WERE THOSE 40,000
12 PEOPLE STATIONED AT EDWARDS?

13 A THERE WERE 40,000 PEOPLE STATIONED AT MUROC
14 IN THE -- DURING THE WAR. AT ANY ONE PARTICULAR TIME,
15 YOU'D FIND 40,000 PEOPLE THERE.

16 IT WOULD BE COMPRISED OF A RANGE OF
17 INDIVIDUALS. YOU WOULD HAVE MAINTAINERS OF THE
18 AIRCRAFT. YOU WOULD HAVE TRANS AND GUNNERY CREWS, ARMOR
19 CREWS, THINGS LIKE THAT. YOU WOULD HAVE FLIGHT TEST
20 CREWS.

21 YOU MIGHT HAVE HAD A CIVILIAN TEST FORCE.
22 YOU MIGHT HAVE HAD CIVILIANS LIVING IN HOUSING IN
23 SURROUNDING COMMUNITIES. YOU MIGHT HAVE EVEN HAD -- YOU
24 KNOW, YOU MIGHT HAVE EVEN HAD PEOPLE DETAIL FROM THE
25 BASE TO LIVE IN OFFSHORE -- IN OFF-BASE HOUSING. BUT
26 THE ASSIGNED NUMBER OF PEOPLE WAS 40,000.

27 MR. KUHS: I'LL MOVE TO STRIKE EVERYTHING IN HIS
28 RESPONSE AFTER YES.

1 **THE COURT:** I'M GOING TO DENY THAT REQUEST.

2 **BY MR. KUHS:**

3 **Q** WHEN DID WORLD WAR II START, DR. HALLION?

4 **A** WORLD WAR II STARTED IN SEPTEMBER 1939.
5 AND AMERICAN INVOLVEMENT IN WORLD WAR II BEGAN ON
6 DECEMBER 7, 1941. AND, OF COURSE, IT ENDED, THEN, IN
7 AUGUST OF 1945.

8 **Q** SO THIS TROOP BUILDUP WOULD HAVE BEEN IN
9 PREPARATION FOR WAR?

10 **A** THERE WAS A STEADY EXPANSION -- YES. THERE
11 WAS A STEADY EXPANSION IN THE AMERICAN MILITARY
12 NATIONWIDE, YOU KNOW, RESPONDING TO DICTATES OF
13 PRESIDENT ROOSEVELT, FROM LATE 1930S ONWARDS.

14 ONCE WE HAD THE OUTBREAK OF THE WAR IN
15 SEPTEMBER 1939, THE ACQUISITION OF MATERIAL AND THE
16 IMPOSITION OF A DRAFT, I MEAN, THAT ALL WORKED TO
17 ACCELERATE THE GROWTH OF AMERICAN MILITARY FORCES.

18 **Q** AND HOW MANY PERSONNEL ARE STATIONED AT
19 EDWARDS TODAY?

20 **A** I DON'T KNOW.

21 **Q** IS IT FAIR TO DESCRIBE WORLD WAR II AS A
22 WAR OF ATTRITION?

23 **MR. LEININGER:** OBJECTION, VAGUE.

24 **THE COURT:** SUSTAINED.

25 **BY MR. KUHS:**

26 **Q** HAVE YOU EVER DESCRIBED WORLD WAR II AS A
27 WAR OF ATTRITION?

28 **MR. LEININGER:** RENEWED OBJECTION.

1 **THE COURT:** WHY IS THAT RELEVANT TO HIS TESTIMONY
2 OR THE ISSUES IN THIS CASE?

3 **MR. KUHS:** YOUR HONOR, TRYING TO ESTABLISH THAT
4 WAR AND PERSONNEL AND MILITARY AIRCRAFT BUILDUP IN WORLD
5 WAR II IS COMPLETELY DIFFERENT THAN THE SITUATION TODAY.
6 WE NO LONGER HAVE WARS OF ATTRITION.

7 **THE COURT:** WELL, I'M NOT SO SURE THAT'S TRUE.
8 BUT I'M GOING TO SUSTAIN THE OBJECTION. I THINK IT'S
9 FAR AFIELD.

10 **BY MR. KUHS:**

11 **Q** DOCTOR, YOU MENTIONED THAT THERE WAS SOME
12 ROCKET TESTING DONE AT LEEMAN RIDGE. DO I HAVE THAT
13 CORRECT?

14 **A** YES. LEUHMANN RIDGE.

15 **Q** OH. IN WHAT PART OF THE BASE IS LEUHMANN
16 RIDGE?

17 **A** IT'S ON THE EAST -- IT'S A RIDGE THAT RISES
18 ON THE EAST LAKESHORE OF ROGERS DRY LAKE.

19 **Q** DO YOU KNOW HOW MANY ROCKET FIRINGS TOOK
20 PLACE ON LEUHMANN RIDGE IN 1965?

21 **A** I DON'T KNOW THE PRECISE NUMBER.

22 **Q** DO YOU KNOW HOW MANY ROCKET FIRINGS TOOK
23 PLACE ON LEUHMANN RIDGE IN 1966?

24 **A** I DON'T KNOW THE PRECISE NUMBER.

25 **MR. KUHS:** YOUR HONOR, YOU WANT TO TAKE A BREAK?

26 **THE COURT:** IF YOU'RE DONE, I'M GOING TO TAKE A
27 BREAK. IF YOU'RE NOT DONE, I MIGHT GIVE YOU ANOTHER
28 MINUTE OR TWO.

1
2 (PAUSE IN THE PROCEEDINGS.)
3

4 **THE COURT:** WELL, I DON'T WANT TO RUSH YOU,
5 MR. KUHS. IF YOU WANT TIME TO LOOK THROUGH YOUR NOTES
6 AND DECIDE IF YOU'VE GOT MORE QUESTIONS, WE'LL TAKE OUR
7 MIDMORNING BREAK AT THIS TIME, FOR 15 MINUTES.

8 **MR. KUHS:** THANK YOU.
9

10 (RECESS.)
11

12 **THE COURT:** ALL RIGHT. LET'S HAVE THE WITNESS
13 RETURN TO THE STAND. ASK EVERYBODY TO BE SEATED,
14 PLEASE.

15 MR. KUHS.

16 **MR. KUHS:** I'M GOING TO REST, YOUR HONOR.

17 **THE COURT:** I'M SORRY?

18 **MR. KUHS:** I'M GOING TO REST.

19 **MR. ZIMMER:** NO MORE QUESTIONS? YOU DON'T WANT TO
20 REST.

21 **MR. KUHS:** NO MORE QUESTIONS.

22 **THE COURT:** TOO EARLY FOR YOU TO REST.

23 ALL RIGHT. ANYBODY ELSE WISH TO
24 CROSS-EXAMINE THE WITNESS?

25 ALL RIGHT. REDIRECT.

26 **MR. LEININGER:** THANK YOU, YOUR HONOR. AND JUST
27 TO -- ACTUALLY, A BOOKKEEPING ISSUE. WITH REGARD TO THE
28 VIDEO THAT WAS THE EXHIBIT 255, IT DOES HAVE A BATES

1 LABEL IN THE DATABASE, 045930. AND THE PHOTOS OF THE
2 B-1 CRASH -- I'M SORRY. I WAS TOLD NOT TO CALL THAT A
3 CRASH. THE B-1 LANDING WAS A BATES LABEL 45931 TO
4 45940.

5 **THE COURT:** WAS THAT A CRASH LANDING?

6 **THE WITNESS:** IN-FLIGHT EMERGENCY. IN-FLIGHT
7 EMERGENCY AND UNUSUAL RECOVERY.

8 **THE COURT:** WELL, ALL RIGHT.

9 **MR. LEININGER:** NOT A CRASH, YOUR HONOR.
10 JUST ONE QUESTION ON REDIRECT, YOUR HONOR.

11

12 **REDIRECT EXAMINATION**

13 **BY MR. LEININGER:**

14 **Q** DR. HALLION, YOU HAD TESTIFIED ABOUT THE
15 BEST ATTRIBUTES OF EDWARDS AIR FORCE BASE, AND I BELIEVE
16 ONE OF THEM WAS ITS REMOTENESS; SO I WANT YOU TO
17 DESCRIBE IN A LITTLE MORE DETAIL WHAT IS MEANT BY
18 "REMOTENESS." IS THAT A DISTANCE FROM POPULATION
19 CENTERS?

20 **A** YES, IT IS. AND REMOTENESS IS MORE THAN
21 MERELY HAVING SOMETHING AT A DISTANCE SO THAT YOU CAN'T
22 SEE IT. REMOTENESS INVOLVES A WHOLE LOT OF ISSUES. IT
23 CAN INVOLVE SAFETY ISSUES. WE ARE TESTING HIGHLY RISKY
24 AIRCRAFT, AND YOU DO NOT WANT TO HAVE THE EXPECTATION OF
25 THESE COMING DOWN IN POPULATED AREAS.

26 IT CAN BE ALSO -- TO BE QUITE FRANK ABOUT
27 IT, IT CAN BE A -- IT CAN BE A QUALITY OF LIFE ISSUE,
28 AIRCRAFT NOISE. AIRCRAFT NOISE IS A SERIOUS PROBLEM

1 WITH HIGH PERFORMANCE AIRPLANES. WE'RE SEEING THIS
2 WHERE I LIVE IN THE GULF COAST, WITH THE NEW AIRCRAFT
3 CALLED THE F-35.

4 YOU HAVE A SMALL, CONSTRAINED BASE WITH A
5 LOT OF LITTLE COMMUNITIES AROUND IT, AND THE NOISE
6 LEVELS IF YOU'RE DOING ROUTINE TRAINING, AS WE ARE, AND
7 THEN TESTING ON TOP OF THAT, THAT GETS TO BE -- THAT
8 GETS TO BE ONEROUS TO PEOPLE THAT DON'T BELIEVE, LIKE I
9 DO, THAT JET NOISE IS THE SOUND OF FREEDOM.

10 SO THE REMOTENESS OF EDWARDS, THE SIZE OF
11 THAT RESERVATION, THE REMOTENESS IS VERY ATTRACTIVE FOR
12 A WHOLE NUMBER OF REASONS IN TERMS OF SITING FACILITIES
13 THAT USE SPECIAL PURPOSE TESTING ON TRAINING, CONDUCTING
14 HAZARDOUS FLIGHT TEST OP -- POTENTIALLY HAZARDOUS FLIGHT
15 TEST OPERATIONS, THINGS OF THAT SORT.

16 Q SO EDWARDS DOES NOT HAVE THIS ENCROACHMENT
17 PROBLEM, IN YOUR OPINION?

18 A EDWARDS, I THINK, HAS BEEN SUCCESSFUL UP TO
19 THE PRESENT TIME IN MAINTAINING THE PERIMETERS OF THE
20 INSTALLATION SO THAT ENCROACHMENT HAS NOT PROVEN AN
21 ISSUE; HOWEVER, IT HAS MAINTAINED THAT ONLY BY
22 CONSISTENTLY FIGHTING ATTEMPTS TO ENCROACH UPON IT.

23 THE EXAMPLE I WOULD GIVE IN THE 1980S, WHEN
24 I WAS AT EDWARDS, WAS THE CREATION OF A VERY TALL
25 TRANSMISSION TOWER IN THE ROSAMOND ERA -- AREA WAS
26 RELOCATED, I BELIEVE, BECAUSE WE SUCCESSFULLY PROTESTED
27 THAT IT WOULD ENCROACH UPON OUR SUPERSONIC, LOW ALTITUDE
28 FLIGHT TEST CAR.

1 THIS IS SOMETHING THAT YOU ALWAYS HAVE TO
2 WATCH, YOU KNOW, THE POTENTIAL OF PUTTING IN FACILITIES,
3 ACTIVITIES, HABITATION AREAS, WHATEVER IT IS, ON THE
4 PERIPHERY OF THE BASE THAT PREVENTS THAT BASE FROM
5 ACCOMPLISHING IN AN EXPEDITIOUS MANNER WHAT IT NEEDS TO
6 DO FOR NATIONAL DEFENSE PURPOSES.

7 **Q** THANK YOU, DR. HALLION.

8 **MR. LEININGER:** NO FURTHER QUESTIONS, YOUR HONOR.

9 **THE COURT:** ALL RIGHT. THANK YOU.

10 **THE WITNESS:** THANK YOU, YOUR HONOR.

11 **THE COURT:** ALL RIGHT. THE WITNESS IS EXCUSED.

12 **MR. LEININGER:** JUST BEFORE WE END WITH -- OR NOW
13 THAT WE HAVE IT IN, DR. HALLION, I WOULD MOVE FOR
14 SUBMISSION OF HIS EXHIBITS, HIS FOUR EXHIBITS.

15 **THE COURT:** ANY OBJECTION TO THE EXHIBITS?

16 **MR. ZIMMER:** NO.

17 **THE COURT:** THEY'LL BE RECEIVED.

18 **MR. LEININGER:** THANK YOU.

19

20 (EXHIBIT NUMBERS 3, 126, 255,
21 AND 260, RECEIVED.)

22

23 **THE COURT:** CALL YOUR NEXT WITNESS.

24 **MR. DUBOIS:** JIM DUBOIS, FOR THE UNITED STATES.
25 THE NEXT WITNESS I WOULD CALL IS GENERAL MICHAEL BREWER.

26 **THE COURT:** ALL RIGHT, SIR. WOULD YOU COME
27 FORWARD PLEASE AND BE SWORN.

28 WHY DON'T YOU REMAIN STANDING AND RAISE

1 YOUR RIGHT HAND, PLEASE.

2 **THE CLERK:** YOU DO SOLEMNLY STATE THAT THE
3 TESTIMONY YOU MAY GIVE IN THE CAUSE NOW PENDING BEFORE
4 THIS COURT SHALL BE THE TRUTH, THE WHOLE TRUTH, AND
5 NOTHING BUT THE TRUTH, SO HELP YOU GOD?

6 **THE WITNESS:** I DO.

7 **THE COURT:** PLEASE STATE YOUR FULL NAME, SPELL IT,
8 AND STATE YOUR BUSINESS ADDRESS, PLEASE.

9 **THE WITNESS:** WELL, BUSINESS ADDRESS I MIGHT HAVE
10 TO LOOK UP, ACTUALLY. BUT BRIGADIER GENERAL MICHAEL T.
11 BREWER, MICHAEL THOMAS BREWER. M-I-C-H-A-E-L,
12 T-H-O-M-A-S, B-R-E-W-E-R. AND I AM -- BUSINESS ADDRESS
13 IS EDWARDS, CALIFORNIA, 412 TEST WING. AND ACTUALLY, IF
14 YOU GIVE ME ONE SECOND --

15 **THE COURT:** THAT'S ACTUALLY CLOSE ENOUGH, EDWARDS
16 AIR FORCE BASE.

17 **THE WITNESS:** SURE. IT'S THE BENEFIT OF HAVING A
18 STAFF. THEY JUST SEND ME STUFF.

19 **MR. DUBOIS:** YOUR HONOR, MAY MR. OYARZO APPROACH
20 THE WITNESS AND --

21 **THE COURT:** YES.

22 **MR. DUBOIS:** HE HAS A STACK OF EXHIBITS.
23 PLEASE.

24
25 (INAUDIBLE: REPORTER'S INTERRUPTION.)
26

27 **MR. DUBOIS:** I SAID AS WITH ALL THE OTHERS, THESE
28 HAVE PREVIOUSLY BEEN STAMPED.

1 **THE WITNESS:** I GUESS BEFORE WE GET STARTED, DO
2 YOU MIND IF I JUST APOLOGIZE? I DID MY BEST TO TRY TO
3 AVOID COMING TO COURT BY BEING SICK, AND APPARENTLY IT
4 WASN'T GOOD ENOUGH; SO BEAR WITH ME AS I TRY TO GET
5 THROUGH THIS. I'LL TRY NOT TO INFECT ANYBODY IN THE
6 PROCESS.

7 **THE COURT:** WELL, WE'RE HAPPY TO HAVE YOU HERE,
8 GENERAL. IF YOU HAVE ANY PROBLEMS, LET ME KNOW.

9 GO AHEAD, MR. DUBOIS.

10 **MR. DUBOIS:** THANK YOU, YOUR HONOR.

11

12 **DIRECT EXAMINATION**

13 **BY MR. DUBOIS:**

14 **Q** GENERAL BREWER, COULD YOU PLEASE TELL THE
15 COURT YOUR CURRENT RANK AND POSITION WITH THE AIR FORCE.

16 **A** BRIGADIER GENERAL. AND, AGAIN, I'M THE
17 COMMANDER OF THE 4 TFLS 412 TEST WING, WHICH IS NOT ONLY
18 THE TEST WING, BUT AS OF JUST OVER A YEAR AGO, I GUESS
19 IT'S ABOUT A YEAR AND A HALF NOW, WHAT WAS FORMERLY TWO
20 WINGS IS ACTUALLY COMBINED INTO ONE LARGE WING.

21 SO RESPONSIBLE FOR THE TEST PIECE AT
22 EDWARDS, BUT ALSO FOR ALL THE INSTALLATION AS WELL. SO
23 THE -- EVERYTHING FROM MISSION TO EVERYTHING THAT GOES
24 TO SUPPORT THE MISSION, WHETHER THAT BE FROM MAINTENANCE
25 TO THE ROADS AND THE SEWER SYSTEM TO EXECUTING FLIGHT
26 TESTS.

27 **Q** WHAT'S THE AIR FORCE FLIGHT TEST CENTER OR
28 THE AIR FORCE TEST CENTER?

1 **A** AIR FORCE TEST CENTER, AGAIN, WAS PART OF
2 THIS ORGANIZATIONAL CHANGE WE WENT THROUGH ABOUT A YEAR
3 AND A HALF AGO, SO THAT THE AIR FORCE TEST CENTER NOW IS
4 IN ESSENCE A HEADQUARTER'S FUNCTION THAT -- SIMILAR TO A
5 NUMBER OF AIR FORCE, THAT COMPRISES THREE PRIMARY BASES;
6 EDWARDS AIR FORCE BASE, ARNOLD ENGINEERING DEVELOPMENT
7 CENTER OR ARNOLD AIR FORCE BASE IN TULLAHOMA, TENNESSEE,
8 AND ALSO EGLIN AIR FORCE BASE IN THE PANHANDLE OF
9 FLORIDA. SO IN ESSENCE WE'RE DEVELOPMENTAL TESTING.
10 ALL THESE THREE BASES NOW REPORT TO A CENTRAL COMMANDER.

11 **Q** GENERAL BREWER, IN FRONT OF YOU THERE ARE
12 SOME EXHIBITS. WOULD YOU LOOK FOR U.S. 7, WHICH WOULD
13 BE THE ONE ON THE TOP, BATES NUMBER 4079.

14 **THE COURT:** I'M GOING TO ASK YOU TO SPEAK UP A
15 LITTLE BIT, PLEASE.

16 **MR. DUBOIS:** I'M SORRY. USUALLY I DON'T HAVE A
17 PROBLEM WITH MY VOICE CARRYING, BUT I WILL GET A LITTLE
18 CLOSER TO THE MIC.

19 **THE COURT:** IT'S PROBABLY MY EARS, BUT YOU GO
20 RIGHT AHEAD.

21 **BY MR. DUBOIS:**

22 **Q** ALL RIGHT. LOOK FOR IT. YOU'VE GOT IT
23 THERE.

24 FOR THE REST OF YOU, OF THE HERD, IT'S
25 BATES NUMBER 40790.

26 CAN YOU IDENTIFY THIS DOCUMENT FOR ME,
27 PLEASE?

28 **A** THAT IS MY OFFICIAL BIO, BIOGRAPHY.

(EXHIBIT NUMBER U.S. 007,
IDENTIFIED: BRIGADIER GENERAL
MICHAEL T. BREWER'S BIOGRAPHY.)

BY MR. DUBOIS:

Q YOU'RE FAMILIAR WITH THIS DOCUMENT, I
ASSUME.

A I AM.

Q AND DID YOU HELP PREPARE IT?

A I DID.

THE COURT: WHAT IS THE NUMBER OF THAT?

MR. DUBOIS: I'M SORRY. THAT IS 007, YOUR HONOR.

THE COURT: THANK YOU.

MR. DUBOIS: I APOLOGIZE FOR THE BINDER.

THE COURT: THAT'S ALL RIGHT.

MR. DUBOIS: THEY DIDN'T NECESSARILY SURVIVE
TRANSPORT IN PRISTINE CONDITION.

THE COURT: ONE OF THE HAZARDS OF MY WORK. GO
AHEAD.

BY MR. DUBOIS:

Q ALL RIGHT. DOES THIS ACCURATELY REFLECT
YOUR TRAINING AND EXPERIENCE?

A IT DOES.

Q AND IS IT UP TO DATE?

A LET ME DOUBLE-CHECK.

IT IS.

Q EXCELLENT. CAN YOU BRIEFLY DESCRIBE YOUR

1 EDUCATIONAL BACKGROUND?

2 **A** I STARTED OUT BACHELOR OF SCIENCE DEGREE.
3 GRADUATED OUT OF NORTH CAROLINA STATE UNIVERSITY IN
4 ELECTRICAL ENGINEERING, THEN INTERNATIONAL RELATIONS.
5 MASTER'S OF SCIENCE FROM FLORIDA STATE UNIVERSITY.

6 AIR FORCE P.M.E. I WAS DISTINGUISHED
7 GRADUATE OUT OF SQUADRON OFFICER SCHOOL, DISTINGUISHED
8 GRADUATE OUT OF AIR FORCE TEST PILOT SCHOOL,
9 DISTINGUISHED GRADUATE OUT OF AIR COMMAND AND STAFF
10 COLLEGE, DISTINGUISHED GRADUATE OF THE INDUSTRIAL
11 COLLEGE IN THE ARMED FORCES.

12 WENT TO THE NATIONAL SECURITY MANAGEMENT
13 COURSE AT MAXWELL SCHOOL AT SYRACUSE UNIVERSITY, AND
14 ALSO GRADUATED THE AIR FORCE ENTERPRISE LEADER SEMINAR
15 FROM THE UNIVERSITY OF -- UNIVERSITY OF NORTH CAROLINA,
16 WHICH WAS DIFFICULT FOR A NORTH CAROLINA STATE GRADUATE
17 TO GO TO.

18 **Q** WE ALL HAVE TO SUFFER SOME HUMILIATIONS IN
19 LIFE.

20 **A** YES.

21 **Q** I WOULD JUST REQUEST ONE THING, GENERAL, IS
22 THAT -- AND I WILL TRY AND DO IT MYSELF BECAUSE I SUFFER
23 FROM THE SAME PROBLEM, THAT I TEND TO TALK FAST, AS DO
24 YOU. AND THE YOUNG LADY BEHIND YOU IS TRYING TO KEEP UP
25 WITH BOTH OF US; SO I'LL JUST ASK YOU TO SLOW DOWN A
26 LITTLE BIT FOR HER BENEFIT, PLEASE.

27 **THE WITNESS:** I WILL TRY TO HAVE MY BEST SYMPATHY
28 FOR YOU.

1 BY MR. DUBOIS:

2 Q THANK YOU. HOW DOES THE -- HOW DOES YOUR
3 TRAINING AT THE AIR COMMAND STAFF COLLEGE RELATE TO YOUR
4 CURRENT POSITION?

5 A SO I GUESS IT MIGHT BE EASIER JUST TO TALK
6 ABOUT ALL P.M.E. AS YOU GO THROUGH, AND THAT'S --

7 Q WHEN YOU USE ACRONYMS, YOU'RE GOING TO HAVE
8 TO --

9 A SO P.M.E. -- THANK YOU -- THAT WOULD BE
10 PROFESSIONAL MILITARY EDUCATION. SO YOU THINK OF AIR
11 COMMAND AND STAFF COLLEGE AS WHAT WE CALL THE
12 PREPARATION FOR OFFICERS WHO OPERATE AT THE OPERATIONAL
13 LEVEL OF WARFARE; SO THIS IS THE POINT WHERE, OBVIOUSLY,
14 YOU GO TO WAR. YOU EXECUTE TACTICS IN THE FIELD.

15 THEN YOU HAVE A STRATEGY. YOU HAVE TO GET
16 FROM THAT STRATEGY AND TACTICS, AND THERE'S A LEVEL OF
17 OPERATION IN BETWEEN THERE. THAT'S WHAT WE CALL THE
18 "OPERATIONAL LEVEL OF WAR," AND THAT'S WHAT WE FOCUS ON
19 AT AIR COMMAND STAFF COLLEGE, FOR OUR OFFICERS TO BE
20 ABLE TO OPERATE, TO TRANSFORM STRATEGY INTO THEATER
21 LEVEL OPERATIONS THAT THEN GET TRANSLATED INTO TACTICAL
22 OPERATIONS.

23 IN CONTRAST, THE NEXT LEVEL OF PROFESSIONAL
24 MILITARY EDUCATION, P.M.E., IS MORE FOCUSED ON THE
25 STRATEGIC LEVEL. IN MY CASE, IT WAS INDUSTRIAL COLLEGE
26 OF THE ARMED FORCES, AS PART OF THE NATIONAL DEFENSE
27 UNIVERSITY IN FORT MCNAIR, JUST OUT OF WASHINGTON, D.C.

28 THE PURPOSE OF THIS IS NOW TO GET OFFICERS

1 TO FOCUS ON SENIOR OFFICERS, TYPICALLY OFFICERS THAT
2 WILL BE PREPARED TO OPERATE AT THE WING COMMAND LEVEL
3 AND ABOVE, OFFICERS WHO WILL PREPARE TO EVENTUALLY GO
4 INTO THE FLAG RANGE, THE GENERAL OFFICER RANKS, TO BEGIN
5 TO OPERATE STRATEGICALLY AND THINK STRATEGICALLY AND
6 PROVIDE THE STRATEGIC DIRECTION THAT IS NOW MULTIPLE
7 THEATER, LONG-RANGE, LOOKING OUT 10, 20, 30, 40 YEARS,
8 AS OPPOSED TO THE OPERATIONAL LEVEL OF WARFARE WHERE
9 YOU'RE LOOKING OUT TO MAYBE 12 MONTHS, 24 MONTHS IN THE
10 THEATER, AS OPPOSED TO A TACTICAL LEVEL OF WARFARE WHERE
11 YOU'RE LOOKING AT, WHAT AM I GOING TO BE DOING TOMORROW?

12 Q THANK YOU. DOES THE INDUSTRIAL COLLEGE
13 TRAINING PREPARE YOU FOR LONG-TERM PLANNING AT BASES
14 LIKE EDWARDS?

15 A SO IT PREPARES YOU EVEN BROADER THAN THAT,
16 SO NOT AT THE BASE LEVEL. THE IDEA IS TO TEACH THE
17 GENERAL PRINCIPLES, AS WELL AS SPECIFICS, BUT PRINCIPLES
18 IN TERMS OF STRATEGIC PLANNING. BY EXAMPLE, OFFICER
19 JUST SCANNING THE ENVIRONMENT, UNDERSTANDING WHAT THE
20 FORCES ARE THAT ARE MOVING TO THE DIRECTION. HOW DO YOU
21 ADAPT TO THAT ENVIRONMENT?

22 WE TALK ABOUT AND FRAME THIS SPECIFICALLY
23 IN TERMS OF ENDS, WAYS AND MEANS, DEVELOPING THE ENDS
24 THAT YOU WANT, UNDERSTANDING WHAT WAYS ARE AVAILABLE TO
25 YOU TO ACHIEVE THOSE ENDS, AND THEN ENSURE THAT YOU HAVE
26 THE MEANS IN ORDER TO EXECUTE THOSE WAYS.

27 OBVIOUSLY, IF ANY OF THOSE GET OUT OF
28 BALANCE, THEN YOU DON'T HAVE MUCH OF A STRATEGY. AND

1 IT'S IMPORTANT WE KEEP THOSE IN BALANCE. IF YOU DON'T
2 HAVE THE MEANS TO EXECUTE THE WAYS YOU PLAN, WHERE YOU
3 HAVE A UNEXECUTABLE END OR AN UNOBTAINABLE END, THEN
4 YOU'RE NOT GOING TO HAVE AN EFFECTIVE STRATEGY.

5 Q I'D LIKE TO SHIFT TO YOUR TIME AT THE AIR
6 FORCE AND COMMAND EXPERIENCES. CAN YOU BRIEFLY
7 SUMMARIZE FOR THE COURT YOUR COMMAND -- WELL, ACTUALLY,
8 YOUR FLIGHT AND COMMAND EXPERIENCES WITH THE AIR FORCE?

9 A OKAY. PROBABLY EASIEST TO WORK BACKWARDS.
10 AND I'LL JUST HIT THE HIGHLIGHTS. OBVIOUSLY, THEY'RE IN
11 THE BIO ITSELF.

12 CURRENTLY, AGAIN, COMMANDER OF THE 412 TEST
13 WING, RESPONSIBLE FOR TESTING AT EDWARDS AS WELL AS ALL
14 THE INSTALLATION FUNCTIONS AT EDWARDS.

15 PRIOR TO THAT, I WAS A COMMANDER AT THE
16 ARNOLD ENGINEERING AND DEVELOPMENT CENTER, ARNOLD AIR
17 FORCE BASE. THIS IS A BASE WHERE WE DO ALL THE GROUND
18 TESTING FACILITIES, THINGS FROM TESTING ROCKET ENGINES,
19 JET ENGINES, WIND TUNNELS. VERY LARGE INDUSTRIAL
20 COMPLEX OUT IN TULLAHOMA, TENNESSEE, WHERE WE DEVELOP
21 ALL THIS STUFF AT THE GROUND TEST FACILITY.

22 PRIOR TO THAT, I WAS A COMMANDER OF THE --
23 WHAT WAS THEN CALLED THE 46 TEST WING, WHICH PROVIDES
24 PRIMARILY WEAPONS TESTING OUT OF EGLIN AIR FORCE BASE.
25 THE IMPORTANCE OF THAT IS WHEN WE THINK ABOUT THE
26 ANTECEDENT DEVELOPMENTAL TESTS ACROSS THE AIR FORCE TEST
27 CENTER, I'VE ACTUALLY BEEN THE COMMANDER OF ALL THREE
28 COMPONENTS THAT MAKE THE AIR FORCE TEST CENTER, SO

1 PRETTY BROAD UNDERSTANDING OF WHAT THE AIR FORCE
2 DEVELOPMENTAL TEST IS, HAVING COMMANDED ALL THE
3 ORGANIZATIONS TO DO THAT.

4 FROM -- PRIOR TO THAT, I WORKED AS A
5 SQUADRON COMMANDER AND FLIGHT COMMANDER, AS WELL AS A
6 LINE TEST PILOT, FLYING PRIMARILY F-15'S AND F-16'S IN
7 THAT TEST OPERATION. AND THEN AS AN OPERATIONAL TEST
8 PILOT OR OPERATIONAL PILOT, MOST OF THAT TIME WAS FLYING
9 F-111'S AND F-15E, STRIKE EAGLES IN EUROPE.

10 Q OKAY. AND DO YOU HAVE EXTENSIVE KNOWLEDGE
11 OF THE AIRSPACE FOR THE MAJOR AIR FORCE BASES IN THE
12 UNITED STATES?

13 A I DO HAVE A KNOWLEDGE OF, AN EXCEPTIONALLY
14 DEEP KNOWLEDGE OF THE AIRSPACE ASSOCIATED WITH THE TEST
15 FACILITIES.

16 MR. DUBOIS: YOUR HONOR, I'D OFFER GENERAL BREWER
17 AS AN EXPERT IN THE MANAGEMENT AND OPERATIONS OF EDWARDS
18 AIR FORCE BASE AND AIR FORCE BASE GENERALLY AND IN AIR
19 FORCE STRATEGIC PLANNING.

20 THE COURT: ALL RIGHT. IS THERE ANY VOIR DIRE OF
21 THE WITNESS?

22 ALL RIGHT. THE WITNESS IS CERTAINLY
23 QUALIFIED AND MAY TESTIFY.

24 MR. DUBOIS: THANK YOU.

25 BY MR. DUBOIS:

26 Q NOW I'D LIKE TO SWITCH, JUST TALKING A BIT
27 ABOUT EDWARDS AIR FORCE BASE.

28 MR. DUBOIS: CAN YOU BRING -- MITCH, CAN YOU BRING

1 UP EXHIBIT 194? AND LET'S START WITH BATES
2 NUMBER 51900.

3 **THE COURT:** YOU SAID EXHIBIT 194?

4 **MR. DUBOIS:** IT'S IN 194, AND THE BATES NUMBER IS
5 51900.

6 WE CERTAINLY DO LOSE THE COLOR WITH THIS
7 PROJECTOR. THAT'S INTERESTING.

8 **BY MR. DUBOIS:**

9 **Q** SO, GENERAL, COULD YOU PLEASE DESCRIBE THE
10 GENERAL PHYSICAL LAYOUT OF EDWARDS AIR FORCE BASE? AND
11 THERE SHOULD BE A LASER POINTER UP THERE IF YOU NEED IT.
12 SOMEBODY WALKED OFF WITH IT.

13 MR. OYARZO MAY APPROACH?

14 **THE COURT:** YES.

15 **THE WITNESS:** SO WHAT YOU SEE HERE IS PART OF WHAT
16 WE TALK ABOUT WHEN WE TALK ABOUT THE EDWARDS RANGE
17 COMPLEX AND FACILITY OUT HERE. IN MANY WAYS IT'S A
18 SMALL PART, EVEN THOUGH IT'S INCREDIBLY LARGE.

19 SO WHAT YOU SEE HERE ARE THE GROUND
20 CONFINES THAT MAKE UP EDWARDS AIR FORCE BASE, AS
21 DEPICTED OUT ON THE LINES HERE.

22
23 (EXHIBIT NUMBER 194, IDENTIFIED:
24 MAP OF EDWARDS AIR FORCE BASE.)
25

26 **THE WITNESS:** SO RIGHT IN HERE, IF YOU CAN SEE
27 SORT OF THIS LINE RIGHT HERE, THAT IS OUR MAIN RUNWAY.

28 JUST TO GIVE YOU SCALE, THAT MAIN RUNWAY IS

1 JUST OVER TWO MILES LONG AS YOU GET THROUGH, SO VERY
2 LONG RUNWAY. BUT THIS GIVES YOU A PROPORTION OF HOW
3 LARGE THE DRY LAKE BED IS HERE. IT'S OVER 45 SQUARE
4 MILES OR SO. THIS ONE HERE IS OVER 20 SQUARE MILES IN
5 TERMS OF LAKE BED.

6 MR. DUBOIS: JUST FOR A MATTER OF PERSPECTIVE,
7 WOULD YOU -- MITCH, WOULD YOU PUT UP BATES NUMBER 51905
8 IN THE SAME EXHIBIT, 194?

9 BY MR. DUBOIS:

10 Q THIS MIGHT HELP WITH PERSPECTIVE. THIS
11 IS -- WELL, CAN YOU DESCRIBE WHAT THIS IS?

12 A SO I NORMALLY USE THE D.C. AREA WHEN I DO
13 THIS. AND IF YOU THINK ABOUT IT IN TERMS OF THE D.C.
14 AREA, THE ENTIRE D.C. BELTWAY WILL FIT INSIDE THE
15 CONFINES OF THE RANGE AIRSPACE.

16 IN CALIFORNIA, IF YOU DO THE EQUIVALENT,
17 HERE'S SAN FRANCISCO, WHICH YOU CAN SEE THAT ONE DRY
18 LAKE BED ENCOMPASSES ALL OF SAN FRANCISCO. SO FROM
19 SAN FRANCISCO, YOU SEE ACROSS HERE WOULD BE OAKLAND,
20 ALAMEDA, BLACK HAWK, DIABLO, DANVILLE, CLAYTON, ALL
21 WITHIN THE CONFINES OF THE SPACE.

22 IF WE JUST CHANGE THE ORIENTATION A LITTLE
23 BIT, YOU'D SEE THAT WE COULD ACTUALLY INCLUDE MARTINEZ,
24 CONCORD AS WELL IN THAT, JUST TO GIVE YOU A PERSPECTIVE
25 OF THE RANGE.

26 SO WHAT DOES THAT MEAN FOR OUR FOLKS? SO
27 WHEN WE HIT THE WELCOME TO EDWARDS AIR FORCE BASE SIGN,
28 IT'S A 14-MILE DRIVE TO THE FIRST BUILDING, AND THAT

1 GETS YOU HALFWAY ON THE BASE. IF I WANT TO DRIVE FROM
2 MY OFFICE -- WHICH IF WE CAN BACK UP ONE PHOTO. IS THAT
3 POSSIBLE?

4 Q YES.

5 A SO MY OFFICE SITS RIGHT HERE. WHEN I WANT
6 TO DRIVE OVER TO THE SOUTH BASE AREA, WHERE WE DO
7 PRIMARILY BOMBER TESTING THERE, IT TAKES ME OVER
8 20 MINUTES TO DRIVE AROUND THE ROAD JUST TO GET TO THE
9 OTHER SIDE OF THE BASE; SO IT IS A VERY, VERY LARGE
10 AREA. IN TERMS OF SPACE, IT'S OVER 300,000 ACRES. I
11 THINK IT'S 307,000 ACRES OF AREA.

12 AGAIN, MOST OF THE DRY LAKE BED HERE, ALL
13 LANDABLE. WE ALSO HAVE LANDABLE RUNWAYS HERE ON
14 ROSAMOND DRY LAKE BED AS WELL.

15 Q WHAT ARE THE SMALL, ODD SHAPES TO THE EAST
16 OF THE MAIN LAKE BED, THAT ROSAMOND -- IS THAT ROSAMOND
17 LAKE BED?

18 A THIS IS -- SO YOU'RE TALKING ABOUT THIS
19 AREA HERE?

20 Q YES.

21 A THESE ARE THE IMPACT ZONES. SO IN THERE WE
22 HAVE WHERE WE CAN USE FOR MUNITION IMPACTS, AS WELL AS
23 FOR AIR DROPPING IN TERMS OF, FOR EXAMPLE, DROPPING
24 PALLETS OUT OF C-17'S, FOR EXAMPLE.

25 MATTER OF FACT, IF YOU TAKE A LOOK IN THIS
26 TOP SQUARE HERE, IN THAT -- THANK YOU. THAT'S BIGGER.
27 THIS TOP SQUARE HERE JUST WE -- I GUESS IT'S ABOUT
28 THREE, FOUR WEEKS AGO WE JUST DROPPED THE FIRST GUIDED,

1 JOINT, DIRECT ATTACK MUNITION, G.P.S. GUIDED BOMB FROM
2 NET 35 OFF THAT AND ONTO THE TARGET AND HIT OUR END
3 POINT WITHIN 3 FEET, SO NOT TOO BAD.

4 Q BUT THOSE -- THE ACTUAL IMPACT AREAS ARE A
5 VERY SMALL PORTION OF THE BASE; IS THAT CORRECT?

6 A THAT'S CORRECT. SO THIS IS -- THIS IS
7 AGAIN -- THESE ARE JUST PLOWED OUT AREAS THAT WE USE FOR
8 IMPACT. WE HAVE THEM INSTRUMENTED AS WELL SO WE CAN GET
9 SCORING AND SO FORTH. BUT, AGAIN, THESE ARE JUST PLOWED
10 UNDER AREAS OF THE DESERT.

11 Q AND THE INSTRUMENTATION IS A -- AND THE
12 MONITORING OF THOSE INSTRUMENTS IS A CRITICAL PART OF
13 THE TEST FUNCTION?

14 A AND MATTER OF FACT, THAT IS WHAT MAKES THE
15 TEST RANGE, IS THE INFRASTRUCTURE THAT STANDS BEHIND IT
16 IN TERMS OF CONTROL; OTHERWISE, YOU'RE JUST DROPPING A
17 BOMB.

18 Q OKAY. WHAT'S THE CURRENT MILITARY MISSION
19 AT EDWARDS AIR FORCE BASE?

20 A SO FOR US, OBVIOUSLY IT'S TO DELIVER THE
21 CAPABILITIES THAT WINS THE NATION'S WARS FOR THE AIR
22 FORCE. WE DIVIDE THOSE REALLY INTO THREE AREAS; FIRST,
23 GLOBAL POWER, WHICH IS THE ABILITY TO AVOID COMBAT
24 POWER, WHERE YOU THINK ABOUT THAT AS THE TEETH; SO THIS
25 WOULD BE OUR FIGHTERS AND OUR BOMBERS.

26 THEN WE HAVE GLOBAL REACH, WHICH IS THE
27 ABILITY TO GET TO THE FIGHT, DELIVER EQUIPMENT TO THE
28 FIGHT, AND BRING OUR FOLKS BACK FROM THE FIGHT. EXAMPLE

1 OF THAT WOULD BE C-17 CARGO TYPE AIRCRAFT IN TERMS OF
2 TRANSPORT.

3 AND THEN WE HAVE GLOBAL VIGILANCE, WHICH
4 IS -- WE HIT IT EARLIER. THIS I.S.R., THIS IDEA OF
5 DOING RECONNAISSANCE AND SURVEILLANCE. FOR US THAT
6 WOULD BE THE GLOBAL HAWK, A UNMANNED AERIAL VEHICLE.
7 AGAIN, THAT TYPE OF TESTING IS DONE HERE AT EDWARDS AS
8 WELL. SO --

9 Q DO YOU ALSO RUN OPERATIONS FOR GLOBAL HAWK
10 OUT OF EDWARDS?

11 A WE DON'T RUN OPERATIONS, BUT WE'LL -- BUT
12 WE FLY THE AIRCRAFT AND WE FLY THE TEST AIRCRAFT OUT
13 THERE.

14 Q WHAT OTHER -- WHAT'S THE A.F.T.C.?

15 A SO A.F.T.C., AGAIN, IS THE AIR FORCE TEST
16 CENTER. SO SPECIFICALLY, THAT'S ONE BUILDING. THAT'S A
17 HEADQUARTERS BUILDING, WHERE MY BOSS SITS. AND, AGAIN,
18 HE HAS THREE WINGS THAT REPORT TO HIM, THE 412 TEST
19 WING, EDWARDS, EGLIN, THE 96 TEST WING, AND ARNOLD
20 ENGINEERING DEVELOPMENT CENTER.

21 Q AND THE FUNCTION OF THE A.F.T.C., DOES
22 IT -- WELL, WHAT DOES IT -- WHAT DOES IT DO, SO TO
23 SPEAK? DO THEY DO TACTICAL OPERATIONS?

24 A NO. SO THAT -- AGAIN, IT'S A COMMAND
25 ELEMENT; SO THIS IS WHERE WE DO RESOURCING OF THOSE
26 THREE BASES, WHO'S GOING TO GET WHAT PORTION OF OUR
27 BUDGET. OUR TEST BUDGET GETS DIVIDED TO ENSURE THAT WE
28 HAVE EFFICIENT OPERATIONS, COMMON PROCEDURES BEING ONE

1 OF THOSE, TO ENSURE WE HAVE COMMON DEVELOPMENT.

2 HERE WOULD BE AN EXAMPLE. I DO NOT WANT TO
3 DEVELOP MY OWN INSTRUMENTATION SYSTEM AT EDWARDS AND
4 HAVE A INCOMPATIBLE INSTRUMENTATION SYSTEM BE DEVELOPED
5 AT EGLIN. NOW WE HAVE SYSTEMS THAT DON'T WORK TOGETHER
6 AND WE PAY -- THE TAXPAYER HAD TO PAY TWICE FOR TWO
7 DIFFERENT SYSTEMS.

8 SO THE FUNCTION OF THE CENTER WOULD BE MAKE
9 SURE THAT, OKAY, YOU HAVE COMPATIBLE SYSTEMS, WE ONLY
10 PAY FOR IT ONCE, YOU DON'T DEVELOP THINGS TWICE, AND WE
11 HAVE COMMON PROCESSES.

12 Q COULD YOU USE THE -- SAY THE F-35 AS SORT
13 OF AN EXAMPLE OF THE ARC BETWEEN EARLY DEVELOPMENT AND
14 TESTING TO PRODUCTION?

15 A SURE. SO IN TERMS OF AT EDWARDS?

16 Q YES.

17 A OKAY. IF YOU TIE BACK -- AGAIN, IN TERMS
18 OF CAPABILITY. SO YOU HAVE TO HAVE THE DEVELOPMENT
19 STRUCTURE, EVERYTHING FROM BASIC RESEARCH TO FIELD OP.
20 SO SIMPLE, YOU HAVE TO DO THE BASIC RESEARCH. THE BASIC
21 RESEARCH DETERMINES THE AERODYNAMICS. HOW DO FLIGHT
22 CONTROL LAWS WORK? HOW DO THE PHYSICS, AS WE MOVE
23 FORWARD, WORK?

24 THE PRIMARY GUYS WHO DO THIS, OF COURSE,
25 ARE A.F.R.L. OUR AIR FORCE RESEARCH LAB CONTRACTORS DO
26 THIS, SOMETIMES ON THEIR OWN.

27 THAT NOW TECHNOLOGY IS PUT TOGETHER INTO A
28 DEVELOPMENTAL PROGRAM. WE WOULD TEST THAT DEVELOPMENTAL

1 PROGRAM AT EDWARDS AS WELL. THAT TURNS INTO A FIELDDED
2 SYSTEM, AND THEN THAT FIELDDED SYSTEM NOW HAS TO BE
3 CHECKED OUT AT THE END OF PRODUCTION TO MAKE SURE IT
4 GOES TO THE FIELD.

5 SO WITHOUT THE BASIC RESEARCH YOU CAN'T DO
6 THE DEVELOPMENT. WITHOUT THE DEVELOPMENT YOU CAN'T
7 BUILD THE SYSTEM. WITHOUT THE SYSTEM YOU CAN'T DELIVER
8 TO THE FIELD.

9 Q NOW, WE'VE HEARD EARLIER TODAY AND
10 YESTERDAY THAT YOU ALSO HAVE AN AIR FORCE RESEARCH LAB,
11 OR A.F.R.L., AT EDWARDS. CAN YOU DESCRIBE THAT BRIEFLY,
12 PLEASE?

13 A SO A.F.R.L. ON THIS PICTURE SITS RIGHT HERE
14 (INDICATING), AND THAT IS THE RIDGE THAT WAS DISCUSSED
15 PREVIOUSLY.

16 SO THEIR -- AIR FORCE RESEARCH LAB, THEIR
17 PRIMARY FUNCTION IN THIS PIECE OF THE AIR FORCE RESEARCH
18 LAB IS PRIMARILY ROCKET PROPULSION; SO THEY'LL DO BASIC
19 RESEARCH AND ACTUALLY DEVELOPMENT WORK AS WELL IN TERMS
20 OF ROCKET PROPULSION. THAT ROCKET PROPULSION, AGAIN,
21 CONCERNS INTO MULTIPLE SYSTEMS, WHICH CAN INCLUDE FROM
22 WEAPON SYSTEMS TO ROCKET SYSTEMS THEMSELVES.

23 Q AND WE ALSO HEARD SOME DISCUSSION EARLIER
24 TODAY -- I THINK YOU WERE HERE FOR IT, BUT WERE YOU HERE
25 FOR ALL THIS MORNING'S TESTIMONY?

26 A UNFORTUNATELY.

27 Q ARE YOU BITING THE HAND THAT FEEDS ME,
28 GENERAL? PLEASE DON'T DO THAT.

1 WE HEARD ABOUT THE NASA OPERATION AT
2 EDWARDS. CAN YOU TELL ME HOW NASA FITS INTO THE
3 MILITARY MISSION AT EDWARDS?

4 A SURE. SO, AGAIN, WHEN WE TALK ABOUT THAT
5 CONTINUUM AGAIN, RESEARCH NOW FEEDS THE DEVELOPMENT OF
6 SYSTEMS AND MOVES FORWARD. WHAT NASA THERE PROVIDES IS
7 BASIC AERONAUTICAL RESEARCH; SO THE THINGS THEY LEARN
8 AND DISCOVER WE THEN DEVELOP AND TURN INTO OUR SYSTEMS.

9 SO THIS WOULD HAVE BEEN -- I'D SAY I
10 GRADUATED TEST PILOT SCHOOL IN '95, SO SOMEWHERE IN THE
11 1998-99 PERIOD I'M A CAPTAIN, AND I'M ACTUALLY FLYING
12 WITH NASA ON A NASA AIRCRAFT, WHICH IS ACTUALLY A LOANER
13 AIR FORCE AIRCRAFT.

14 AND WHAT WE'RE DOING IS WE'RE DEVELOPING
15 VARIABLE NOZZLES. SO THINK ABOUT THE EXHAUST COMING OUT
16 OF THE BACK OF AN AIRPLANE AND TRYING TO TURN THE
17 AIRPLANE AND YOU CAN'T TURN THE AIRPLANE ANY MORE. THEY
18 CAME UP WITH THE BRIGHT IDEA, WELL, IF I COULD JUST TURN
19 THE NOZZLES, THEN I WOULD JUST USE THE THRUST TO POINT
20 MY AIRPLANE IN A DIFFERENT WAY. SEEMS LIKE A GREAT
21 IDEA.

22 THAT BASIC RESEARCH ON HOW YOU DO THAT, HOW
23 YOU USE THAT AS A METHOD OF CONTROL -- BECAUSE, BY THE
24 WAY, WHEN YOU DO THAT, IT BECOMES VERY DIFFICULT IN
25 TERMS OF STRUCTURES. IT BECOMES VERY DIFFICULT IN TERMS
26 OF THE FLIGHT CONTROLS OF THE AIRPLANE.

27

28 (INDISCERNIBLE: REPORTER'S INTERRUPTION.)

1
2 **THE WITNESS:** SO HOW DO WE -- SO VERY DIFFICULT
3 CHALLENGE. SO THEY DID THAT BASIC RESEARCH. I GOT TO
4 FLY THAT BASIC RESEARCH.

5 FAST-FORWARD A FEW YEARS LATER AND WE'RE
6 DEVELOPING THE F-22, WHICH NOW HAS VARIABLE NOZZLES ON
7 IT, WHICH FED OFF THAT BASIC RESEARCH THAT WAS DONE IN
8 NASA. SO, AGAIN, IT'S A CONTINUUM, AND THAT HAPPENS
9 EVERY DAY.

10 RIGHT NOW THEY DO FLIGHT CONTROL RESEARCH.
11 HOW CAN WE USE DIFFERENT METHODS OF DOING FLIGHT
12 CONTROLS? AT THAT TIME, AS WELL, WE WERE USING FLIGHT
13 CONTROLS THAT -- IF YOU HAD BATTLE DAMAGE ON AN
14 AIRCRAFT, THE FLIGHT CONTROLS COULD SENSE WHAT THAT
15 BATTLE DAMAGE WAS, SENSE HOW THE AIRCRAFT NOW FLIES
16 DIFFERENTLY BECAUSE YOU'RE MISSING PART OF YOUR
17 AIRCRAFT, REWRITE ITS OWN FLIGHT CONTROL LAWS SO NOW IT
18 CAN FLY ITS AIRPLANE, AND IT DOES ALL THAT AUTOMATICALLY
19 FOR YOU. THAT'S BASIC RESEARCH WORK THAT WILL NOW BE
20 TURNED INTO -- LATER INTO A COMBAT AIRCRAFT.

21 **Q** THANK YOU. SO DURING YOUR TENURE AT
22 EDWARDS, HAS THE -- HAS EDWARDS HAD ANY OTHER MILITARY
23 MISSIONS THAT WERE NONTEST MISSIONS STATIONED AT EDWARDS
24 DURING YOUR TENURE?

25 **A** OH, SURE. DURING THAT TIME, WE HAD A
26 SQUADRON OF MARINE HELICOPTERS, AND THEY WERE AN
27 OPERATIONAL UNIT THAT JUST FLEW MARINE HELICOPTERS AND
28 WERE STATIONED.

1 **Q** AND AS I UNDERSTAND IT, THEY MOVED ON,
2 BUT --

3 **A** THAT'S CORRECT. AND THAT WAS JUST A
4 TRAINING FUNCTION THAT HAPPENED TO BE STATIONED THERE.

5 **Q** ALL RIGHT.

6 **A** AND THOSE MISSIONS EBB AND FLOW IN THE
7 CHANGING OF THE BASE.

8 **Q** AND DO YOU EXPECT THAT EBB AND FLOW TO
9 CONTINUE IN THE FUTURE?

10 **A** THERE'S NO DOUBT THAT THAT EBB AND FLOW --

11 **MR. KUHS:** OBJECTION, VAGUE.

12 EXCUSE ME.

13 **THE COURT:** OVERRULED.

14 **THE WITNESS:** SO THERE'S NO DOUBT THAT THE EBB AND
15 FLOW WILL CONTINUE. THAT'S JUST THE NATURE OF DOING A
16 TEST BUSINESS.

17 SO IF YOU THINK ABOUT THAT, HOW MUCH TEST
18 WORK ARE WE DOING EARLY RESULTS ON PROPELLER AIRCRAFT,
19 ALL THOSE HAD TEST PROGRAMS ASSOCIATED WITH IT. HOW
20 MANY OF THOSE AIRCRAFT ARE WE TESTING TODAY? WELL, ZERO
21 OF COURSE.

22 LIKEWISE, AIRPLANES THAT WE'RE TESTING
23 TODAY WILL FILL AND COMPLETE THEIR LIFE CYCLE.
24 EVENTUALLY, THE B-52 WILL FILL AND COMPLETE A LIFE
25 CYCLE, AND THE NEW PROGRAMS WILL COME IN. SO THAT'S
26 JUST THE NATURE OF TEST WORK, IS THAT AS NEW
27 TECHNOLOGIES COME IN, NEW SYSTEMS ARE DEVELOPED, OTHERS
28 ARE RETIRED, NEW ONES COME IN.

1 THE F-22 COMES IN. THE F-22 SHRINKS. F-35
2 GROWS. WE'RE GOING TO REPLACE THAT BOMBER ONE DAY.
3 THERE WILL BE A NEW BOMBER PROGRAM. CERTAINLY WILL BE A
4 BOMBER PROGRAM.

5 **BY MR. DUBOIS:**

6 Q ALL RIGHT. LET'S TALK ABOUT WHAT MAKES
7 EDWARDS UNIQUE AS A BASE. CAN YOU DESCRIBE FOR ME WHAT
8 MAKES THE EDWARDS AIR FORCE TEST CENTER A UNIQUE ASSET?

9 A SO, REALLY, I WOULDN'T USE THE TEST CENTER
10 IN THIS CONTEXT BECAUSE THE TEST CENTER, AGAIN, IS A
11 COMMAND ELEMENT THAT COMPRISES THREE BASES. SO REALLY
12 IT'S WHAT MAKES EDWARDS UNIQUE, WOULD BE A BETTER WAY TO
13 PHRASE THAT.

14 WHAT MAKES EDWARDS UNIQUE ARE SEVERAL
15 THINGS, AND WE'VE ALREADY TOUCHED ON THESE EARLIER
16 TODAY. ONE, THE LAKE BED. THERE IS A -- SO WE ACTUALLY
17 DO THINGS LIKE GO AND TAKE A SINGLE ENGINE -- AN
18 AIRCRAFT THAT ONLY HAS ONE ENGINE, TAKE IT AIRBORNE.
19 AND AT SOME POINT YOU WANT TO KNOW IF THAT ENGINE, IF IT
20 TURNS OFF, THAT YOU CAN RESTART IT.

21 SO THAT MEANS AT SOME POINT SOMEONE'S GOT
22 TO TAKE THAT SINGLE ENGINE AIRPLANE, TAKE THE ONE MOTOR
23 THAT'S WORKING, TURN IT OFF, AND THEN TRY AND RESTART
24 IT. IF IT DOESN'T RESTART, IT'S VERY HANDY TO HAVE THAT
25 GIANT LAKE BED UNDERNEATH YOU THAT YOU CAN LAND ON.

26 Q LET'S TURN TO EXHIBIT 243. THAT MIGHT BE
27 HELPFUL. BATES NUMBER 45976.

28 IT'S 243, YOUR HONOR.

1 **A** IN TERMS OF GREAT -- (COUGHING) EXCUSE ME.
2 SO THERE'S A GREAT --

3 **Q** FIRST, CAN YOU IDENTIFY WHAT THIS PICTURE
4 SHOWS?

5 **A** SURE. SO RIGHT HERE IS OUR MAIN RUNWAY.
6 WE HAVE A TEMPORARY RUNWAY SITTING IN HERE NOW. AGAIN,
7 THIS IS THE MAIN LAKE BED. BECAUSE WE GO THROUGH --
8 THIS IS THE IMPACT AREAS THAT WE DISCUSSED EARLIER, AND
9 ROSAMOND LAKE BED HERE.

10
11 (EXHIBIT NUMBER 243, IDENTIFIED:
12 PHOTOGRAPH.)
13

14 **BY MR. DUBOIS:**

15 **Q** NOW, I NOTICE THE RUNWAY SEEMS TO RUN
16 STRAIGHT DOWN TO THE LAKE BED. WHY IS THAT?

17 **A** CORRECT. WELL, THAT'S FOR A VERY GOOD
18 REASON. THERE ARE TIMES WHEN WE SET UP TESTING WHERE
19 WE'RE GOING TO DO THINGS -- MATTER OF FACT, WE JUST DID
20 THIS WITH A B-52 A FEW WEEKS AGO, COMPLETED IT. SO B-52
21 REALLY SMOKES. IT'S A 50 YEAR OLD AIRPLANE. WHY IN THE
22 WORLD ARE YOU STILL TESTING IT?

23 TURNS OUT YOU CAN'T BUY BRAKE PARTS FOR
24 50 YEAR OLD AIRPLANES ANYMORE; SO WE HAD TO REDESIGN THE
25 ENTIRE BRAKE SYSTEM, 'CAUSE THOSE MANUFACTURERS DON'T
26 EXIST ANYMORE. AND THEY WERE FAILING AT A RATE THAT WE
27 COULDN'T -- WE DESIGNED THE BRAKE SYSTEM, PUT A NEW
28 BRAKE SYSTEM ON THE AIRCRAFT. WE DID THE SAME THING FOR

1 THE B-1 AS WELL.

2 SO YOU WANT TO MAKE SURE THOSE BRAKES WILL
3 STOP. SO WE WILL ACTUALLY FILL THE AIRCRAFT UP TO MAX
4 GROSS TAKEOFF WEIGHT, TAKE IT TO MAX SPEED AND STOP THE
5 AIRCRAFT, KNOWING THAT IT'S GOING TO CATCH THE BRAKES ON
6 FIRE. WE KNOW IT'S GOING TO HAPPEN.

7 WELL, WHEN YOU DO THAT TYPE OF TESTING, YOU
8 WOULD LIKE TO DO IT THIS DIRECTION, BECAUSE IF YOU CAN'T
9 STOP THE AIRPLANE -- AND YOU HAVE AN AIRPLANE THAT'S
10 WEIGHING 200, 300,000 POUNDS, THAT'S GOING 170,
11 180 MILES AN HOUR, AND NOW THE BRAKES THAT YOU JUST PUT
12 ON THE AIRCRAFT DON'T WORK ANYMORE, AND WHAT YOU DO IS
13 YOU JUST KEEP GOING.

14 AND AGAIN, HERE, PERSPECTIVE, YOU KNOW,
15 IT'S A LITTLE BIT MORE THAN TWO MILES, BUT WE CAN JUST
16 CALL IT TWO MILES. NOW WE'RE TALKING FOUR, SIX MILES;
17 SO YOU GOT PLENTY OF ROOM TO RUN OUT.

18 SO WE'LL ACTUALLY ORIENT -- WE'LL DELAY THE
19 TESTING TO MAKE SURE THE WIND'S CORRECTED FOR SOME --
20 CORRECT FOR SOME TEST SO THAT WE CAN HAVE THE LAKE BED
21 AVAILABLE TO RUN ON OUR OWN, SO VERY IMPORTANT FOR US.

22 AND, AGAIN, A LARGELY LANDABLE AREA. IT
23 EBBS AND FLOWS; SO WE HAVE TO MANAGE THE RANKS OF --
24 AGAIN, I DON'T UNDERSTAND THE DYNAMICS OF IT, BUT THAT
25 IS PART OF THE NATURAL HEALING OF THE LAKE BED AS IT
26 FILLS UP.

27 SO EVERY DAY WE GO TO FLY. ONE OF THE
28 THINGS WE GO TO CHECK IS -- I HAVE BASE OPERATIONS.

1 BASE OPERATIONS GOES AND INSPECTS EVERY DAY THE
2 CONDITIONS OF ALL OUR LAKE BED RUNWAYS AND THEY PUBLISH
3 THAT.

4 AND WHEN WE STEP THAT DAY TO FLY, YOU LOOK
5 UP AND YOU GO, OKAY, THESE LAKE BEDS ARE RED, THESE LAKE
6 BEDS ARE YELLOW, WHICH YOU COULD USE THEM, BUT ONLY IN
7 EMERGENCY. AND THEN THESE LAKE BEDS ARE GREEN. THEY'RE
8 FULL UP DRY AND READY TO GO. AND THAT ADDS UP OVER THE
9 COURSE OF THE YEAR, DEPENDING ON WHEN THE MOST RECENT
10 RAIN WAS AND THE CONDITION OF THE LAKE BED.

11 Q DO YOU --

12 A I CAN'T REMEMBER WHERE WE GOT STARTED ON
13 THIS.

14 Q THAT'S ALL RIGHT. WE WERE TALKING ABOUT
15 THE USE OF THE LAKE BEDS, AND I THINK YOU'VE EXPLAINED
16 WHY IT'S USEFUL.

17 YOU WERE HERE FOR THE VIDEO OF THE F-16 --

18 A YES.

19 Q -- COMING DOWN?

20 A YES.

21 Q AND AS I UNDERSTAND IT, THAT PLANE HAD NO
22 LANDING GEAR WHEN IT CAME DOWN; IS THAT CORRECT?

23 A THAT'S CORRECT.

24 Q AND HOW DOES THE AVAILABILITY OF THIS LAKE
25 BED FOR LANDING AFFECT HOW QUICKLY YOU CAN RETURN AND
26 RECOVER THOSE PLANES THAT HAVE TO MAKE THIS SORT OF AN
27 EMERGENCY LANDING?

28 A SO IT'S REALLY ACTUALLY QUITE REMARKABLE.

1 SO IF YOU HAD A CONTROLLED LANDING ON THE LAKE BED --
2 AND IT WAS MENTIONED EARLIER. SO WHEN YOU LAND, YOU
3 APPROACH ON THE LAKE BED, IT'S VERY POWER ON, SO YOU
4 KEEP THE POWER ON THE AIRCRAFT.

5 Q CAN YOU SEE IT ON THAT VIDEO? I MEAN, CAN
6 YOU -- DOES THAT -- I'M ACTUALLY JUST ASKING WOULD THAT
7 HELP EXPLAIN IT OR NOT? IF NOT, THE COURT'S ALREADY
8 SEEN IT.

9 A I THINK IT'S OKAY.

10 Q OKAY.

11 A SO WHAT YOU WANT TO DO IS YOU KEEP THE
12 POWER ON THE AIRCRAFT SO YOU CAN GENTLY SET IT DOWN. SO
13 YOU SIT THERE AND MONITOR THE POWER. IT'S A LITTLE BIT
14 DIFFICULT BECAUSE THE LAKE BED IS SO VAST. SOMETIMES
15 YOU GET A GOOD DEPTH PERCEPTION ANYWAYS. SO YOU KEEP
16 THE POWER ON THE AIRCRAFT AND JUST SORT OF EKE IT DOWN.
17 YOU GO, OKAY, THERE'S ANOTHER FOOT, THERE'S ANOTHER
18 FOOT, AND THEN GENTLY SET THE AIRCRAFT DOWN ONTO THE
19 LAKE BED.

20 WE THINK IT'S SO IMPORTANT THAT WHEN WE
21 TRAIN OUR TEST PILOT SCHOOL STUDENTS, WHO GO TO TEST
22 PILOT SCHOOL -- IT'S A YEAR-LONG PROGRAM, VERY
23 COMPETITIVE, CHALLENGING PROGRAM TO GET THROUGH -- PART
24 OF THE CURRICULUM MANDATED IS TO LEARN TO DO LAKE BED
25 LANDINGS BECAUSE YOU NEED TO HAVE THAT AVAILABLE SKILL
26 IN ORDER TO MAKE -- IN ORDER TO BE SAFE.

27 Q AND JUST BRIEF ASIDE. THE TEST PILOT TEST
28 SCHOOLS ARE LOCATED WHERE?

1 **A** THEY ARE AT EDWARDS AIR FORCE BASE.

2 **Q** THANK YOU.

3 **A** SO, AGAIN, THAT ALLOWS YOU TO DO THAT.
4 WITH THAT, YOU ACTUALLY DO REMARKABLY LITTLE DAMAGE TO
5 THE AIRCRAFT. ON AN F-16, IF THE PILOT DOES IT
6 CORRECTLY, GENTLY PUTS THE AIRCRAFT DOWN ON THE LAND,
7 ABLE TO CONTROL THE NOSE SET-DOWN, WE'LL REPLACE THE
8 DORSAL FINS, REPLACE THE UNDERBELLY PANELS.

9 IF HE WAS EFFECTIVE ON GETTING THE MOTOR
10 SHUT OFF RIGHT BEFORE TOUCHDOWN, WHICH WOULD BE THE
11 PROCEDURE, THEN HE PROBABLY DOES NO ENGINE DAMAGE AND,
12 YOU KNOW, IN A MATTER OF A FEW MONTHS WE'LL HAVE THAT
13 AIRCRAFT FLYING AGAIN. IT REALLY IS QUITE REMARKABLE.

14 **Q** AND HOW MUCH DO THEY COST, BRIEFLY?

15 **A** DEPENDS ON THE AIRCRAFT.

16 **Q** LET'S SAY THAT F-16.

17 **A** I BELIEVE THEY'RE GOING AWAY FROM THE F-16
18 TO AROUND \$60 MILLION, GIVE OR TAKE.

19 **Q** SO IT SAVES A FEW BUCKS?

20 **A** SAVES A FEW DOLLARS. AND IF YOU TAKE -- IN
21 THE F-16 -- AN EXAMPLE, WE MENTIONED THE B-1 WITH
22 DIRECTIONAL CONTROL. IN THE F-16, IF YOU'RE GOING TO
23 PART (PHONETIC) A CONTROL SURFACE, THE PROCEDURE IS TO
24 EJECT, PARTICULARLY IN AN AREA -- IF YOU HAD, LIKE, NOSE
25 GEAR -- NO NOSE GEAR BUT TWO MAINS. IF YOU GO --

26 **Q** FOR INSTANCE, YOU'RE REFERRING TO THE B-1?

27 **A** THAT'S RIGHT.

28 **Q** THE PHOTOS THAT WE HAD?

1 **A** RIGHT. IF YOU DID THAT IN AN F-16 AND YOU
2 VEERED OFF, WHICH YOU WILL, AND YOU DIDN'T CATCH THE
3 CABLE, YOU WOULD EJECT OUT OF THE AIRCRAFT BECAUSE THE
4 AIRCRAFT'S GOING TO BE LOST BECAUSE IT'S GOING TO TUMBLE
5 THE MINUTE IT PARTS THE CONTROL SURFACE. ON THE LAKE
6 BED, WELL, YOU DON'T REALLY WORRY ABOUT THAT A WHOLE LOT
7 BECAUSE IT'S ALL SOMEWHAT CRATER SURFACE, IF YOU WILL.

8 SO, AGAIN, LAKE BED, PRIMARY CAPABILITY.
9 FROM THIS PICTURE, IT'S A GREAT ONE TO TAKE A LOOK AT
10 OUR SECOND ATTRIBUTE. MY YOUNG AIRMEN DID NOT LOOK AT
11 IT AS AN ATTRIBUTE, AND THAT IS REMOTENESS. WE ARE OUT
12 THERE.

13 **Q** WELL, LET'S -- IN TALKING ABOUT THE SECOND
14 ELEMENT, THE REMOTENESS, LET'S -- IT MIGHT BE BETTER TO
15 LOOK AT EXHIBIT 194, BATES NUMBER 51901. THAT MIGHT
16 EVEN BE MORE HELPFUL.

17 OKAY. SO DESCRIBE BASICALLY WHAT THIS
18 SHOWS.

19 **A** SO, AGAIN, THIS IS THE SAME GRID THAT YOU
20 SAW BEFORE IN TERMS OF WHAT THE BASE CONFINES ARE. THIS
21 IS THE TOWN OF LANCASTER HERE. ROSAMOND WOULD BE
22 SITTING RIGHT ABOUT HERE, WHICH IS WHAT WE CALL A DOT
23 TOWN BECAUSE IT ONLY SHOWS UP AS A DOT ON AN AVIATION
24 MAP. IT'S NOT LARGE ENOUGH TO SHOW UP AS MUCH ELSE.

25 AS YOU CAN SEE, HERE'S OUR RUNWAY. SO FROM
26 HERE AND ALL THE WAY PAST THE LAKE BED, DO I GET TO THE
27 FIRST, IN ESSENCE, MANNED SITES. GOING THE OTHER
28 DIRECTION, WELL, I CAN GO A LONG WAY BEFORE I GET TO

1 ANYTHING MANNED.

2 SO WHAT THAT ALLOWS US TO DO IS -- IF YOU
3 GO TO A PLACE LIKE EGLIN, NOISE IS AN ISSUE. WE HAVE TO
4 WORRY THERE'S HOUSES OFF THE END OF THE RUNWAY. YOU
5 HAVE TO WORRY ABOUT HAZARD AREAS. THERE'S A PROGRAM
6 CALLED AICUZ, WHICH IS AIRFIELD COMPATIBLE USE AREA.

7 Q AIR INSTALLATION COMPATIBLE USE ZONE?

8 A THAT IS IT, AIR --

9 Q AIR INSTALLATION COMPATIBLE USE ZONE.
10 COULD YOU DESCRIBE WHAT THAT IS, PLEASE?

11 A YEAH. THE REASON I DON'T REALLY KNOW IS
12 BECAUSE I DON'T HAVE ONE. WHAT THAT IS, IS IT PROVIDES
13 ZONES AND AREAS AROUND THE BASE WITH COMPATIBLE GROWTH
14 FOR NOISE, FOR SAFETY ISSUES. DON'T BUILD IN THIS AREA.
15 AGAIN, I DON'T EVEN HAVE ONE OF THOSE BECAUSE WE'RE SO
16 REMOTE WE DON'T NEED IT.

17 AGAIN, MY YOUNG AIRMEN, THIS IS A PROBLEM
18 FOR, BECAUSE WE SEND THEM OUT THERE. THEY SHOW UP.
19 MANY OF THEM DON'T HAVE CARS. AND WE PUT THEM OUT IN
20 THE MIDDLE OF EDWARDS AIR FORCE BASE, AND IT'S 14 MILES
21 TO THE "WELCOME TO EDWARDS AIR FORCE BASE" SIGN. IT'S A
22 45-MINUTE DRIVE TO THE MALL. HARD FOR THEM, GREAT FOR
23 FLIGHT TEST AND ALLOWS -- AGAIN, ALLOWS US TO OPERATE.

24 WE'RE DOING VERY HAZARDOUS THINGS. AGAIN,
25 THERE'S NOT MANY BASES THAT YOU GO AND SAY WE'RE GOING
26 TO LOAD THIS AIRPLANE UP AND WE'RE GOING TO GO AND
27 INTENTIONALLY CATCH THE BRAKES ON FIRE, WHICH IS WHAT WE
28 JUST DID TWICE.

1 **Q** SO THE LACK OF THE AIR INSTALLATION
2 COMPATIBLE USE ZONE, WHAT'S THE SIGNIFICANCE OF THAT
3 RELATIVE TO THE POTENTIAL EFFECT ON NEIGHBORING
4 LANDOWNERS?

5 **A** WELL, FROM THE EFFECT ON ME IS THAT IT
6 ALLOWS ME TO -- IT ALLOWS GROWTH FOR ME IN THAT I CAN
7 OPERATE ANYWHERE IN HERE. I CAN -- I DON'T HAVE TO
8 WORRY ABOUT, AGAIN, NOISE. I DON'T HAVE TO WORRY ABOUT
9 SAFETY AREAS. I DON'T HAVE TO WORRY ABOUT ADJUSTING MY
10 TEST PROFILES BECAUSE I HAVE ALL THAT SPACE AVAILABLE.

11 AND, AGAIN, THIS IS -- THIS IS WORLD CLASS.
12 I'M NOT AWARE OF ANY -- WELL, I GUARANTEE YOU IN THE
13 TEST ENVIRONMENT THERE ARE NO OTHER BASES THAT HAVE THIS
14 TYPE OF ATTRIBUTE IN TERMS OF STANDOFF. IT JUST DOESN'T
15 EXIST IN OTHER BASES.

16 **Q** WHAT IS ENCROACHMENT?

17 **A** SO ENCROACHMENT IS, AGAIN, JUST AS THE WORD
18 WOULD IMPLY, THE ENCROACHMENT OF OTHER ENTITIES ONTO
19 YOUR BOUNDARIES TO DO TESTS.

20 LET'S TALK A BIT. THE BOUNDARIES CAN COME
21 IN MANY WAYS. SO ENCROACHMENT CAN OCCUR -- AGAIN, IT'S
22 LITTLE BIT DIFFICULT TO SEE FROM THIS PHOTO, BUT IF YOU
23 LOOK ALONG THIS RIDGE, THERE'S TONS OF WINDMILLS.
24 THAT'S A FORM OF ENCROACHMENT, BECAUSE IT AFFECTS MY
25 ABILITY TO DO RADAR TESTING BECAUSE ACTUALLY WINDMILLS
26 CAN AFFECT BASIC RADAR TESTING. THAT'S A FORM OF
27 ENCROACHMENT.

28 I SAW A CELL PHONE ON THE DESK OVER THERE.

1 THAT'S A PRIMARY FORM OF ENCROACHMENT FOR US RIGHT NOW,
2 NOT FOR US AT -- FOR US AT EDWARDS AND ACROSS THE ENTIRE
3 CONES (PHONETIC), AS WE COMPETE WITH CELL PHONE
4 COMPANIES FOR TELEMETRY SPACE, FREQUENCY ENCROACHMENT.

5 AND THEN, OF COURSE, THERE'S WHAT'S MORE
6 BROADLY UNDERSTOOD AS BOUNDARY ENCROACHMENT. PLACE LIKE
7 EGLIN, HEAVILY CONCERNED WITH BOUNDARY ENCROACHMENT
8 BECAUSE IT'S IN THE PANHANDLE OF FLORIDA, VERY POPULAR.
9 I AM INSULATED FROM BOUNDARY ENCROACHMENT.

10 Q AND HOW DOES ENCROACHMENT AFFECT AN AIR
11 FORCE BASE?

12 A AGAIN, THE ABILITY FOR US IF WE LOST THIS
13 ENCROACHMENT -- I'VE ALREADY MENTIONED THAT, YOU KNOW,
14 WE KEPT THIS OPEN, FOR EXAMPLE, FOR BEING ABLE TO RUN
15 OUT LAKE BEDS. I USE THIS AREA FOR LANDING, AND YOU SEE
16 130 WORK HERE. IF I HAD NOISE ISSUES, IF I HAD SAFETY
17 ISSUES IN TERMS OF I'M DOING HIGH RISK TESTING, I'M
18 WORRIED ABOUT PUTTING AN AIRPLANE IN SOMEONE'S BACKYARD,
19 ALL THAT WOULD AFFECT AND I'D HAVE TO ADJUST MY PROFILE.

20 Q IS THERE ANY DOWNSIDE TO THE DEGREE OF
21 ISOLATION THAT EDWARDS HAS?

22 A FROM THE TEST PERSPECTIVE, THERE ARE NO
23 DOWNSIDES. MATTER OF FACT, YOU CAN EVEN DO MORE
24 ISOLATED. FROM A QUALITY OF LIFE ISSUE, IT'S MY
25 NUMBER 1 -- IT IS MY NUMBER 1 COMPLAINT FROM OUR AIRMEN.
26 IT IS THE REMOTENESS.

27 Q DOES IT AFFECT HOW YOU HAVE TO MANAGE THE
28 BASE FOR THE PERSONNEL?

1 **A** SURE. SO WHAT THE AIR FORCE HAS DONE IS
2 THEY'VE RECOGNIZED THAT WE ARE OUT THERE; SO THEY HAVE A
3 STATUS THAT THEY'VE GIVEN US, WHICH IS CALLED REMOTE AND
4 ISOLATED STATUS. WHAT THAT ALLOWS ME TO DO IS I CAN
5 SPEND A LITTLE BIT MORE APPROPRIATED FUNDS, NOT A WHOLE
6 LOT, BUT IT GIVES ME SOME FLEXIBILITY IN MY APPROPRIATED
7 FUNDS FOR M.W.R. TYPE FACILITIES.

8 **Q** M.W.R.?

9 **A** I'M SORRY. MORALE, WELFARE, RECREATION
10 TYPE FACILITIES, BASICALLY TAKING CARE OF OUR AIRMEN.
11 IT ALLOWS ME A LITTLE MORE FLEXIBILITY BECAUSE I HAVE
12 THAT STATUS. AND THAT'S ABSOLUTELY CRITICAL.

13 I MEAN, IF YOU THINK ABOUT YOUR 19 YEAR OLD
14 BEING GIVEN TO ME AND -- FOR CARE AND FEEDING, AND I'M
15 GOING TO TAKE THAT 19 YEAR OLD, 20 YEAR OLD SON OR
16 DAUGHTER, WE'RE GOING TO STICK THEM IN A SMALL DORM
17 ROOM, WITH NO CAR, 14 MILES FROM THE GATE, WITH NOTHING
18 TO DO, WELL, THAT'S WHAT WE'RE FORCED TO DO.

19 **Q** OKAY. ARE YOU FAMILIAR WITH THE
20 ENCROACHMENT LIMITATIONS THAT THE OTHER AIR FORCE TEST
21 BASES HAVE?

22 **A** I'M VERY FAMILIAR. THE OPERATIVE ONE THERE
23 IS EGLIN, AND AS THE COMMAND -- TEST COMMANDER THERE,
24 I'M VERY FAMILIAR WITH THAT ENGAGEMENT.

25 **Q** AND I THINK YOUR TESTIMONY WAS THAT EDWARDS
26 DOESN'T HAVE THE SORT OF ENCROACHMENT THAT, SAY, EGLIN
27 DOES.

28 **A** IT IS ABSOLUTELY DAY AND NIGHT. ON ALL

1 ENDS OF THE RUNWAY, THERE IS BASICALLY DEVELOPMENT AT
2 EGLIN.

3 Q OKAY.

4 A AS WELL AS AROUND THE PERIMETER OF THE
5 RANGE.

6 Q ALL RIGHT. YOU LISTED TWO -- YOU ACTUALLY
7 SAID THERE WERE FIVE ATTRIBUTES AND YOU'VE LISTED TWO.
8 ACTUALLY, I THINK THAT WE'VE TALKED ABOUT ENCROACHMENT
9 WOULD BE A THIRD?

10 A I WOULD THROW THAT IN WITH REMOTENESS. WE
11 MENTIONED THE LAKE BED. WHAT DO YOU THINK THE THIRD ONE
12 IS?

13 Q ACTUALLY, I THINK THE THIRD ONE IS PROBABLY
14 AIRSPACE.

15 A OKAY. WE CAN TALK ABOUT THE -- SO I
16 WOULD -- AGAIN, I THOUGHT WE ONLY COVERED TWO, BUT WE'LL
17 COVER ALL OF THEM. SO WEATHER. MATTER OF FACT, THIS IS
18 A GREAT VIEW. NOW, YOU KNOW, I'VE HEARD 361 DAYS OF
19 V.F.R. WEATHER. THAT'S PROBABLY AN EXAGGERATION, WHILE
20 TECHNICALLY CORRECT. IT'S PROBABLY NOT ALL TEST,
21 THOUGH, 361 DAYS.

22 Q WHEN YOU SAY V.F.R. --

23 A I'M SORRY. VISUAL FLIGHT RULES.

24 Q THANK YOU.

25 A SO YOU CAN FLY WITHOUT HAVING RADAR CONTROL
26 WHILE BRINGING IT IN.

27 AND, AGAIN, THE TYPICAL NUMBER TOUTED IS
28 361. EVEN THOUGH WE'RE V.F.R., IT MIGHT BE NOT GOOD

1 ENOUGH STILL TO DO TESTS. BUT WE ARE IN GOOD TEST
2 WEATHER, PROBABLY ON THE ORDER OF 345, 350 DAYS A YEAR
3 ACTUAL TEST WEATHER. THAT IS -- THAT'S GREAT. THERE
4 ARE VERY FEW PLACES WHERE YOU CAN DO THAT.

5 SO REMOTENESS, LAKE BED, WEATHER,
6 INFRASTRUCTURE. SO WE --

7 Q LET'S TALK ABOUT -- HOW ABOUT AIRSPACE?

8 A AIRSPACE, SURE.

9 Q AND I GUESS THE -- ARE THE AIRSPACE AND
10 INFRASTRUCTURE RELATED?

11 A WE CAN DO EITHER ONE. AIRSPACE IS FINE.
12 DO WE HAVE A --

13 Q LET'S PULL UP EXHIBIT 253, WHICH IS BATES
14 NUMBER 44001.

15 A WHILE YOU DO THAT, SO I'VE FLOWN IN --
16 ACTUALLY, I'VE BEEN FLYING AIRPLANES NOW FOR 28 YEARS IN
17 THE AIR FORCE; SO I'VE FLOWN IN A FAIR BIT OF THE
18 AIRSPACE AVAILABLE IN THE (INDISCERNIBLE), AS WELL AS
19 QUITE A BIT OVERSEAS AS WELL.

20 IN THE UNITED STATES, I AM NOT AWARE OF ANY
21 AIRSPACE THAT OPERATES LIKE WE OPERATE OUR AIRSPACE. IT
22 IS ABSOLUTELY UNIQUE. AND IT'S -- WE OPERATE THIS IN A
23 NONEXCLUSIVE USE MANNER. WHAT DOES THAT MEAN?

24 SO IF YOU AND I WERE AT A NORMAL PIECE OF
25 RANGE SPACE, WE GO, SIR, YOU HAVE FROM 8 TO 9:00
26 O'CLOCK. YOU FLY IN THE AIRSPACE. AT 9:00 O'CLOCK YOU
27 LEAVE, AND THEN I FLY FROM NINE TO TEN AND THEN SOMEONE
28 ELSE FLIES, JUST LIKE SCHEDULING A COURTROOM.

1 AT -- OUR AIRSPACE AT 2508, BECAUSE OF THE
2 PROCEDURES WE HAVE, THE INFRASTRUCTURE THAT WE HAVE, THE
3 FACILITIES WE BUILT IN TERMS OF AIR TRAFFIC CONTROL AND
4 HOW WE MANAGE THAT, WE ACTUALLY OPERATE THE NONEXCLUSIVE
5 USE.

6 WHY IS THAT IMPORTANT? SO NOW WE HAVE
7 MULTIPLE TEST SORTIES OPERATING SIMULTANEOUSLY ON
8 AIRSPACE THAT WE, BECAUSE OF OUR PROCEDURES AND OUR
9 INFRASTRUCTURE, CAN COORDINATE IN REAL TIME. THAT IS
10 ABSOLUTELY UNIQUE. NOW, WHY IS THAT DOUBLY IMPORTANT
11 FOR TEST?

12 Q LET'S TALK ABOUT MAYBE THE 2508 AIRSPACE.
13 I THINK THAT -- I PULLED THIS ONE UP, AND YOU CAN
14 IDENTIFY IT AND EXPLAIN IT, BUT WE MAY HAVE ONE THAT IS
15 EASIER TO SEE THAN THIS. WOULD YOU PREFER THE ONE
16 THAT'S EASIER TO SEE?

17 A WE CAN TALK ABOUT THIS. I WILL SAY,
18 THOUGH, THAT THE BENEFIT OF EXCLUSIVE USE IS WHEN YOU DO
19 TEST -- BECAUSE WHAT YOU'RE DOING BY DEFINITION IS NOT
20 GOING TO WORK RIGHT. THAT'S WHY YOU'RE TESTING IT.

21 SO WHEN YOU SAY YOU'RE GOING TO BE THERE AT
22 8:00 O'CLOCK, ON ANY GIVEN TEST MISSION THAT MEANS I'M
23 GOING TO BE THERE FROM 8:00 O'CLOCK TO 10 BECAUSE I HAVE
24 ABSOLUTELY NO IDEA -- WHEN I STARTED THE AIRPLANE UP, IT
25 DIDN'T WORK CORRECTLY. IT DIDN'T START. THE
26 INSTRUMENTATION DIDN'T WORK.

27 SO TO HAVE THE ABILITY TO SLIP AND MOVE IS
28 ABSOLUTELY CRITICAL AND AGAIN UNIQUE TO HERE THAN ANY

1 AIRSPACE THAT I'M AWARE OF IN RECONNAISSANCE, AND I'VE
2 FLOWN IN AN AWFUL LOT OF THEM.

3 SO, AGAIN, WE TALK ABOUT THAT VERY LARGE,
4 300,000 OR SO ACRE OF AREA. THAT'S THIS LITTLE AREA
5 RIGHT HERE.

6 **MR. DUBOIS:** LET ME SUGGEST -- MITCH, PULL UP 194,
7 EXHIBIT 194. BATES NUMBER 51903 WILL PROBABLY BE EASIER
8 TO SEE AND WORK FROM.

9 **THE WITNESS:** OKAY.

10 **BY MR. DUBOIS:**

11 **Q** SO CAN YOU DESCRIBE WHAT THIS SHOWS, WHAT
12 THE GREEN LINE IS, WHAT THE BLUE BOX IS, AND OBVIOUSLY
13 WHERE EDWARDS IS?

14 **A** SURE. THIS DOESN'T SHOW ALL THE AIRSPACE
15 DIVISIONS THAT YOU SEE ON THE AERONAUTICAL CHARTED
16 COURSE. WE TALKED ABOUT THE SPREAD OF THE INSIDE THE
17 CONFINES OF EDWARDS. THAT IS JUST THIS LITTLE SECTION
18 HERE. THE AIRSPACE WE OPERATE IN IS ALL OF THIS, JUST
19 TO GIVE YOU THE SCALE.

20 **Q** AND THAT WAS THE AREA BOUNDED IN GREEN?

21 **A** THAT'S CORRECT. THANK YOU.

22 SO JUST TO GIVE YOU SOME SCALE, THIS IS US.
23 THAT'S LAS VEGAS. SO IF YOU SWING AN ARC, THIS IS THE
24 DISTANCE TO LAS VEGAS. THERE'S FRESNO. BAKERSFIELD
25 DOESN'T EVEN BARELY GET UP, WHAT, A THIRD OF THE WAY UP
26 THE AIRSPACE THAT IS AVAILABLE TO US. THIS IS A
27 REMARKABLE ASSET. THIS IS A NATIONAL ASSET IN TERMS OF
28 AVAILABLE AIRSPACE.

1 SO WHEN I FIRST STARTED FLYING, EVEN FOR
2 ME, IN 28 YEARS -- I STARTED FLYING TESTS IN 1995 -- FOR
3 US TO GO AND DO A RADAR RUN WHERE WE'D -- TESTING A
4 RADAR, OBVIOUSLY YOU HAVE TO GET AT TWO DIFFERENT ENDS,
5 POINT AT EACH OTHER, AND ENSURE THE RADAR IS WORKING
6 CORRECTLY.

7 NOW, IF WE DID AN 80-MILE SETUP, THAT WAS
8 TYPICALLY AMPLE. CERTAINLY, THAT WOULD BE EXCESSIVE FOR
9 AN F-16 AT THAT TIME IN TERMS OF RADAR SETUPS. NOW,
10 WHEN YOU'RE TALKING ABOUT F-22'S AND F-35'S, WE WILL
11 START WAY UP HERE AND PUT OTHER PEOPLE WAY DOWN HERE IN
12 ORDER TO EXECUTE THAT TEST AND NEED ALL THAT AIRSPACE.
13 THIS IS JUST THE NATURE OF THE CHANGE IN WARFARE, NATURE
14 OF THE CHANGE IN OUR CAPABILITIES.

15 WHEN WE WOULD JUST HAVE TWO OR THREE
16 AIRPLANES FLYING IN FORMATION TOGETHER IN A RELATIVELY
17 SMALL PIECE OF SPACE -- I RECENTLY DID AN F-35 TEST. WE
18 HAD TARGETS SPREAD ALL THE WAY ACROSS THE TOP OF THIS
19 AREA IN ORDER FOR THE F-35 -- TO GET THE F-35 TEST DONE.
20 IT'S JUST REFLECTIVE OF THE INCREASED CAPABILITY OF OUR
21 AIRCRAFT.

22 SO EVEN THOUGH THE NUMBERS MAY CHANGE, THE
23 DEMANDS IN TERMS OF AIRSPACE, BECAUSE OF THE NATURE OF
24 THAT, THE LENGTH WEAPONS CAN GO NOW IN TERMS OF THEIR
25 RANGE, THE INCREASES IN RADAR ARE MORE AND MORE
26 DEMANDING ON AIRSPACE, WHICH MAKES ALL AIRSPACE MORE
27 CONGESTED.

28 Q DO THE OTHER TEST BASES HAVE -- THIS IS

1 THE -- WHAT WE CALL THE R-2508 FLIGHT COMPLEX; IS THAT
2 CORRECT?

3 A R-2508 COMPLEX. THAT'S CORRECT.

4 Q DO THE OTHER TEST RANGES FOR THE AIR FORCE
5 HAVE SOMETHING SIMILAR TO 2508?

6 A NOT IN TERMS OF OVER LAND. SO THIS IS THE
7 LARGEST OVER LAND THAT WE HAVE. NOW, WE DO -- EGLIN
8 DOES HAVE OVER WATER, BUT WE HAVE THAT AS WELL.

9 I WOULD LIKE TO ADD ONE FEATURE I
10 MENTIONED, WHICH IS THIS BLUE BLOCK AREA HERE. THAT IS
11 THE HIGH ALTITUDE, SUPERSONIC CORRIDOR. SO, AGAIN, VERY
12 UNIQUE TO US. WE HAVE THE ABILITY OVER LAND TO FLY
13 SUPERSONIC ACROSS HERE. AND OBVIOUSLY THERE'S NOT TOO
14 MANY NONSUPERSONIC FIGHTER AIRCRAFT WE'LL BE TESTING
15 EVER AGAIN. AGAIN, A UNIQUE FEATURE TO BE ABLE TO DO
16 THAT OVER LAND AT EDWARDS AIR FORCE BASE.

17 NOT DEPICTED HERE IS -- SITS APPROXIMATELY
18 RIGHT IN HERE -- IS SOMETHING THAT WE CALL THE BLACK
19 MOUNTAIN SUPERSONIC CORRIDOR. THE BLACK MOUNTAIN
20 SUPERSONIC CORRIDOR AGAIN ALLOWS ME TO TEST SUPERSONIC
21 BUT AT LOW LEVEL. THAT'S PARTICULARLY RARE TO BE ABLE
22 TO BE OVER LAND, SUPERSONIC, IN THE CONES. IT IS A VERY
23 RARE CAPABILITY.

24 Q WHAT KIND OF INFRASTRUCTURE AT EDWARDS BASE
25 IS NECESSARY TO MAKE ALL OF THIS WORK?

26 A SO -- SO IF WE -- SO FOR US IT'S ALL ABOUT
27 DATA. IT'S ALL ABOUT GETTING THE INFORMATION OFF THE
28 AIRCRAFT, BEING ABLE TO UNDERSTAND THAT AND DO THAT. SO

1 WHAT WE NEED TO DO THAT? WE NEED TELEMETRY.

2 SO THAT MEANS WE HAVE TELEMETRY STATIONS
3 ALL THROUGHOUT THE COMPLEX SO WE CAN FLY, GATHER THE
4 AIRCRAFT [SIC] OFF THE AIRPLANE, RELAY THAT BACK TO
5 CONTROL ROOMS REAL TIME. THEY'RE DOWN HERE AT EDWARDS.
6 THEN THAT DATA HAS TO BE PROCESSED, TURNED FROM DATA TO
7 INFORMATION. AND, AGAIN, ALL THAT CAPABILITY EXISTS.
8 ALL THAT INFRASTRUCTURE IN TERMS OF TELEMETRY IS ACROSS
9 THE RANGE, ALL RADIOED BACK TO OUR RADIO CONTROL CENTER
10 BACK AT EDWARDS.

11 DO WE HAVE THE ONE THAT SHOWS THE RANGES
12 LINKED TOGETHER?

13 Q YES. WE CAN GO TO THAT ONE. THAT ONE IS
14 196, WHICH IS BATES NUMBER 50671 IN 196.

15 A SO WE'RE ALSO IN A GREAT NEIGHBORHOOD. SO
16 WHAT WE HAVE DONE IN TERMS OF -- TALKED ABOUT AIRSPACE,
17 AND WE WERE TALKING ABOUT OUR PIECE OF AIRSPACE. AND
18 THIS GIVES YOU A LITTLE PERSPECTIVE HERE, 'CAUSE
19 OBVIOUSLY YOU SEE THE ENTIRE STATE OF CALIFORNIA, AND
20 YOU SEE THE AMOUNT OF RANGE, AIRSPACE WE'RE TALKING
21 ABOUT. IT REALLY IS QUITE DRAMATIC.

22 THESE ARE OVER WATER RANGES HERE,
23 CONTROLLED BY VANDENBERG, THE NAVY, MULTIPLE USERS. WE
24 CAN FLY INTO THAT AIRSPACE AS WELL. AND WE HAVE ALL THE
25 TELEMETRY AND INFRASTRUCTURE SO THAT WE CAN GET THE
26 TELEMETRY OFF THE AIRCRAFT, ROUTE IT BACK, AND DIRECT IT
27 REAL TIME BACK TO OUR CONTROL ROOMS AT EDWARDS.

28 WE CAN DO THAT FROM THE UTTR, WHICH IS THE

1 UTAH TEST AND TRAINING RANGE HERE. WE CAN DO THAT FROM
2 THE NEVADA TEST AND TRAINING RANGE HERE. WE CAN DO THAT
3 FROM THE WHITE SANDS MISSILE RANGE HERE. SO I CAN
4 LAUNCH OUT OF EDWARDS AND GO TO ANY OF THESE RANGES,
5 STILL CONTROL, AND THEN FLEX BACK, FINISH MISSION INSIDE
6 MY 2508 MISSION, AND THEN LAND.

7 SO I RECENTLY FLEW A CHASE SORTIE WITH THE
8 F-15'S, AND I WAS FLYING THE F-16 CHASE SORTIE. WAS
9 ABOUT TWO WEEKS AGO. AND WE WENT. WE FLEW. WE WERE --
10 RAN OUT OF OUR RANGE TIME HERE, WERE ABLE TO IMMEDIATELY
11 FLEX BACK, COMPLETED THE MISSION IN OUR HIGH ALTITUDE,
12 SUPERSONIC CORRIDOR RIGHT OVER EDWARDS AND LANDED.

13 THE ABILITY TO BE IN THAT NEIGHBORHOOD
14 WHERE I COULD GO AND DO OVER WATER RANGE IS -- SOMETIMES
15 WE HAVE TO BE AT SEA LEVEL; SO WE NEED TO BE AT SEA
16 LEVEL TO DO SOME TESTING, FLEX BACK TO EDWARDS, DO NOW
17 HIGH ALTITUDE, SUPERSONIC TESTING, ALL ON THE SAME
18 SORTIE, AND THEN DROP OFF.

19 THAT AIRCRAFT, INCIDENTALLY, LAUNCHED OUT
20 OF -- HE LAUNCHED OUT OF PALMDALE AND I LAUNCHED OUT OF
21 EDWARDS. WE REJOINED IN THE EDWARDS AIRSPACE AND THEN
22 WENT OUT OVER WATER. SO FROM EDWARDS WE USED PLANT 42,
23 WE USED EDWARDS, WE USED OVERSEAS -- OVER WATER RANGES.
24 I USED MY HIGH ALTITUDE, SUPERSONIC CORRIDOR, AND I USED
25 2515, AND THAT'S JUST A NORMAL SORTIE FOR US.

26 Q SO THE PROXIMITY TO THESE OTHER AIR
27 BASES -- OR THESE OTHER AIRSPACES, I SHOULD SAY, IS ONE
28 OF THE MORE UNIQUE ATTRIBUTES OF EDWARDS?

1 **A** THAT'S EXACTLY THE POINT. AND OH, BY THE
2 WAY, WE HAD TANKERS WITH US, REFUELING BOTH HERE AND
3 HERE BECAUSE BOTH -- ALL THESE AREAS ARE AVAILABLE FOR
4 US TO USE AS REFUELING AREAS.

5 **Q** OKAY. DOES THE PHRASE "BOMBING AND GUNNERY
6 RANGE" HAVE A SPECIFIC TERM OF ART MEANING WITHIN THE
7 AIR FORCE?

8 **A** NOT THAT I'M AWARE OF.

9 **Q** DOES THE TERM "RANGE" HAVE A MEANING?

10 **A** "RANGE" CERTAINLY DOES FOR US. WHEN WE
11 TALK ABOUT TEST RANGE, WE'RE TALKING ABOUT EVERYTHING
12 THAT IT TAKES TO GET DATA OFF THE AIRCRAFT.

13 **Q** CAN YOU GIVE -- CAN YOU USE AN EXAMPLE TO
14 ILLUSTRATE THAT FOR THE COURT, PLEASE?

15 **A** SURE. SO WE CAN TAKE A LOOK AT F-35
16 EXAMPLE THAT WE JUST -- THAT I USED, DROPPED THE FIRST
17 GUIDED JDAM OFF THE AIRCRAFT VERY SUCCESSFULLY.

18 SO WHAT DID WE HAVE TO DO TO GET THAT
19 SORTIE? WELL, WE HAD TO GENERATE THE SORTIE, SO THAT
20 MEANT ALL THE MAINTENANCE ACTIVITY TO GET THE ACTI --
21 AIRPLANE CORRECT. THAT MEANS WE HAD TO HAVE THE
22 INSTRUMENTATION ON THE AIRCRAFT.

23 **Q** BUT STARTING BACK A STEP, BASICALLY YOU'RE
24 TALKING ABOUT THE HANGARS, THE MECHANICS, THE --

25 **A** THAT'S CORRECT.

26 **Q** -- MATERIAL ON THE GROUND AT EDWARDS?

27 **A** THAT'S CORRECT. SO WE HAD TO GENERATE THE
28 SORTIE. SO WHAT SORTIE GENERATION FOR US MEANS IS

1 EXACTLY WHAT IT SAYS. SO THAT MEANS -- AND I WOULD
2 ACTUALLY GO BACK FURTHER, WHICH WOULD BE -- AND ALSO, BY
3 THE WAY, THE CARE AND FEEDING OF THE PEOPLE THAT HAVE TO
4 DO THAT ACTIVITY.

5 SO THE CARE AND FEEDING OF THE MAINTAINERS
6 WHO GENERATE THE AIRCRAFT IN TERMS OF HAVING IT READY
7 AND AVAILABLE TO FLY -- THAT MEANS FUELING IT. THAT
8 MEANS SERVICING IT. THAT MEANS FIXING IT. THAT MEANS
9 INSTRUMENTATION. THAT MEANS ITS DESIGN, INSTALLING,
10 PREPARING THE INSTRUMENTATION. THAT MEANS TELEMETRY.
11 THAT MEANS CONTROL ROOMS. AND WHEN EVERYONE THINKS OF
12 THE APOLLO MISSION CONTROL ROOM, IT DOESN'T QUITE LOOK
13 LIKE THAT ANYMORE, BUT IT'S THE GENERAL IDEA AS YOU GO
14 THROUGH. SO ALL THE CONTROLS.

15 AGAIN, BECAUSE REMEMBER, WE'RE DOING THINGS
16 THAT HAVEN'T BEEN DONE BEFORE. WE'RE DOING THINGS THAT
17 WE VERY OFTEN ARE AFRAID ARE GOING TO BREAK THE
18 AIRPLANE; SO WE NEED A LOT OF EYES LOOKING AT THINGS
19 THAT ARE JUST NOT AVAILABLE TO THE PILOT TO SEE,
20 INSTRUMENTATION IN TERMS OF STRESSES ON DIFFERENT
21 MEMBERS OF THE AIRCRAFT, STRESSES ON THE WINGS, MOTOR
22 COMPONENTS, ALL THESE THINGS.

23 SO THERE'S A TEAM OF FOLKS WHO ARE LOOKING
24 AT ALL THOSE FOR YOU WHILE YOU'RE FLYING. YOU DON'T
25 HAVE THAT AVAILABLE, AND YOU WOULDN'T HAVE THE ABILITY
26 TO SEE IT ANYWAY IF YOU DID.

27 SO NOW WE HAVE TO LAUNCH OUT. WE HAVE TO
28 GET ALL THAT TELEMETRY. I HAVE TO HAVE -- I HAVE TO

1 HAVE THE IMPACT AREAS. I HAVE TO HAVE THOSE IMPACT
2 AREAS INSTRUMENTED. AND THEN I HAVE TO RECOVER THE
3 AIRCRAFT. SO IT IS END TO END.

4 IN ORDER TO GET A LITTLE BIT OF DATA THAT
5 SAYS I CAN SUCCESSFULLY DETERMINE MY POSITION, I CAN
6 SUCCESSFULLY DETERMINE THE TARGET POSITION, AND I
7 SUCCESSFULLY GET A G.P.S. GUIDED BOMB THERE, WELL, THAT
8 SEEMS PRETTY STRAIGHTFORWARD, BUT IT TOOK AN IMMENSE
9 ARMY IN ORDER TO GET THAT, REALLY WHAT IS ABOUT
10 30 SECONDS' WORTH OF DATA.

11 Q OKAY. SO IN YOUR PARLANCE "RANGE" MEANS
12 ALL OF THAT?

13 A ALL OF THAT.

14 Q ALL RIGHT.

15 A MATTER OF FACT, WE EVEN PUBLISH A RANGE
16 BOOK THAT SAYS HERE'S OUR RANGE CAPABILITIES. NOW, IF
17 YOU OPEN THAT UP, IT WILL GO HERE'S OUR TELEMETRY
18 CAPABILITY. HERE'S OUR -- HOW MANY ONES OR ZEROES WE
19 CAN PUT IN THE CONTROL ROOM, HOW MANY MEASURANDS,
20 SPECIFIC PIECES OF DATA THAT WE CAN COLLECT. THAT'S
21 WHAT WE MEAN BY RANGE.

22 Q BASED ON YOUR EXPERIENCE AND KNOWLEDGE OF
23 EDWARDS AND YOUR EDUCATION IN STRATEGIC PLANNING AND
24 YOUR KNOWLEDGE OF OTHER AIR FORCE BASES, DO YOU HAVE AN
25 OPINION ON THE LONG TERM POTENTIAL FOR MISSION GROWTH AT
26 EDWARDS AIR FORCE BASE?

27 A SO OBVIOUSLY IT'S -- ONE, YOU HAVE TO SET
28 YOUR TIME FRAME. SO WHEN WE'RE TALKING ABOUT THINGS

1 LIKE WATER RIGHT, THE TIME FRAME IS SET. IT'S NOT
2 WHAT'S GOING TO HAPPEN THREE YEARS FROM NOW. THAT'S A
3 GREAT TACTICAL DECISION.

4 WHAT WE NEED, THOUGH, IS TO SAY OKAY, WHERE
5 ARE WE GOING TO BE POTENTIALLY 50 YEARS FROM NOW? SO
6 THAT MEANS WE NEED TO TAKE A LOOK AT WHAT WE THINK THE
7 ENVIRONMENT IS, WHAT WE THINK THE LONG TERM TRENDS ARE
8 GOING TO BE.

9 SO LET'S TALK ABOUT THAT FOR A SECOND.
10 LET'S USE EGLIN AS AN EXAMPLE. SO BACK IN THE -- I
11 GUESS IT WOULD HAVE BEEN LATE '40S, SOME FOLKS PRESERVED
12 A VERY LARGE PIECE OF RANGE IN THE PANHANDLE OF FLORIDA,
13 AND THIS WAS TO DO WEAPONS TESTING.

14 AT THAT TIME, WE DROPPED GRAVITY BOMBS.
15 THE BOMB RANGE ON THESE THINGS WERE A MATTER OF MILES;
16 SO TWO, THREE, FOUR MILES IS VERY LONG, LONG RANGE AT
17 THAT TIME. THEY SET ASIDE WAY MORE AMMO THAN THAT
18 BECAUSE THEY KNEW THAT WAS NOT GOING TO BE THE LONG
19 TERM, END STATE OF WHAT OUR WEAPONS ARE. RIGHT NOW OUR
20 WEAPONS ARE SUCH LONG RANGE THAT THEY HAVE A DIFFICULTY
21 TIME FITTING IN THIS VERY LARGE AREA.

22 BUT IF THOSE FOLKS IN THE '40S AND EARLY
23 '50S DID NOT HAVE THE FORESIGHT TO PRESERVE THAT RANGE,
24 THEN WE WOULD NOT HAVE BEEN ABLE TO DEVELOP THE WEAPONS
25 THAT, FRANKLY, I DROPPED DURING DESERT STORM, THAT
26 BROUGHT AN ENTIRE WING HOME SUCCESSFULLY. WE DIDN'T
27 HAVE A SINGLE COMBAT LOSS.

28 BUT BECAUSE PEOPLE IN THE '50S HAD THE

1 FORESIGHT TO PRESERVE THAT RANGE, WE WERE ABLE TO
2 DEVELOP LASER-GUIDED WEAPONS. BECAUSE WE DEVELOPED
3 LASER-GUIDED WEAPONS, I CAME HOME. BY THE WAY, MY SON
4 IS IN PILOT TRAINING NOW; SO I'D LIKE HIM TO BE ABLE TO
5 COME HOME IN THE FUTURE AS WELL.

6 SO IT'S ON US TO GO, OKAY, WHAT ARE WE
7 GOING TO NEED INTO THE FUTURE TO MAKE SURE WE HAVE THE
8 CAPABILITIES TO DEVELOP WHAT WE NEED? SO WHAT ARE THE
9 TRENDS THAT I'D ARGUE EXIST? ONE IS THE AMERICAN WAY OF
10 WAR.

11 SO THE AMERICAN WAY OF WAR IS ONE THAT WE
12 GENERALLY DON'T TRADE BLOOD FOR TREASURE AND THAT WE
13 WILL TRADE TREASURE FOR BLOOD, WHICH MEANS THE CHIEF OF
14 STAFF HAS ALREADY MADE THIS COMMITMENT TO MODERNIZATION,
15 AND THAT'S -- THE AMERICAN WAY OF WAR IS TO MAKE SURE
16 THAT WE GO WITH THE BEST TECHNOLOGY THAT THE NATION CAN
17 AFFORD. AND WE NEED TO MAKE IT AFFORDABLE.

18 BUT WE DON'T SELL OFF AMERICAN LIVES. WE
19 WOULD PREFER TO DEVELOP THE TECHNOLOGY TO DO THAT; SO
20 THAT TELLS ME THAT WE'RE GOING TO BE IN THIS BUSINESS
21 FOR A LONG PERIOD OF TIME. THAT'S HOW WE GET -- WE ARE
22 A TECHNOLOGY FORCE; SO WE WILL CONTINUE TO DO THAT. SO
23 THAT'S TREND NUMBER 1.

24 TREND NUMBER 2 IS THE OTHER BASES ARE
25 PRETTY FULL. SO WE'RE NOT GOING TO PUT A WHOLE LOT MORE
26 INTO EGLIN AIR FORCE BASE. THEY'VE GOT THE SEVEN
27 SPECIAL FORCES GROUP. THE F-35 IS THERE, THE -- OUR
28 SPECIAL FORCES -- OUR AIR FORCE SPECIAL FORCES ARE THERE

1 AT HERBERT FIELD. SO THAT AIRSPACE IS RATHER CONGESTED
2 NOW, AND THAT WAS VERY CONGESTED AIRSPACE.

3 WE ARE CONGESTED BUT NOT TO THE EXTENT THAT
4 THEY ARE. SO WE HAVE AVAILABILITY, OKAY, SO I KNOW
5 WE'RE GOING TO CONTINUE TO BE IN THIS BUSINESS. I KNOW
6 OTHER AREAS ARE CONGESTED.

7 WE ALSO KNOW THAT WE'RE GOING TO, AT LEAST
8 FOR QUITE SOME TIME, I THINK, BE IN A -- A FISCALLY
9 CONSTRAINED ENVIRONMENT WHICH DRAWS TO CONSOLIDATION.
10 WE HAVE SEEN THE CONSOLIDATION EFFORT OVER THE PAST. I
11 DON'T SEE ANYTHING THAT LEADS ME TO BELIEVE THAT THAT IS
12 NOT GOING TO CONTINUE. IF YOU'RE IN A CONSOLIDATION IN
13 THE FUTURE, AIRFIELDS THAT HAVE CAPACITY AND ABILITY ARE
14 PRIME CANDIDATES FOR CONSOLIDATION.

15 SO FOR ME I WOULD ARGUE THAT IT'S HIGHLY
16 LIKELY THAT WE ARE GOING TO -- THAT WE ARE A GOOD
17 CANDIDATE FOR GROWTH. THAT IS JUST BASED ON THE FACT
18 THAT WE'RE GOING TO BE IN THIS BUSINESS, WE'RE PROBABLY
19 IN A CONSOLIDATION ENVIRONMENT FOR SOME PERIOD OF TIME,
20 AND WE HAVE THE ABILITY TO DO THAT, BECAUSE EVERYTHING
21 I'VE TALKED TO YOU ABOUT ARE -- IN TERMS ARE UNIQUE
22 ASSETS, UNIQUE AIRSPACE ASSETS, UNIQUE PROXIMITY, LAKE
23 BED. I HAVE LOTS OF CONCRETE ALREADY BUILT. I HAVE AN
24 EXCEPTIONALLY LONG RUNWAY. ALL THESE THINGS MAKE ME
25 ELIGIBLE, IF YOU WILL, FOR THAT AS WE LIVE INTO THE
26 FUTURE.

27 MATTER OF FACT, WE JUST -- THE NAVY FOLKS
28 ARE REDOING THEIR RUNWAYS UP AT CHINA LAKE, WHICH IS

1 JUST A FEW MILES NORTH OF US. SO MATTER OF FACT, IN
2 THIS PICTURE, IF YOU LOOK AT THIS BLOCK HERE IN THE
3 CENTER OF 2508, THAT'S WHERE CHINA LAKE -- THE MAJOR
4 TEST FACILITIES IS.

5 THEY'RE REDOING THEIR RUNWAYS RIGHT NOW; SO
6 THEY HAVE BROUGHT THEIR TEST AIRCRAFT DOWN TO OPERATE AT
7 EDWARDS, AND NOW THEY'RE OPERATING ON MY AIRFIELD. YOU
8 CAN'T EVEN TELL THEY'RE THERE BECAUSE WE HAVE SO MUCH
9 CONCRETE. I ACTUALLY HAD TO DRIVE AROUND THE BASE
10 LOOKING AND FIND WHERE ARE WE PARKING, BECAUSE I DIDN'T
11 KNOW WHERE TO PARK THE AIRCRAFT. I COULDN'T FIND IT.

12 BUT WE HAVE THAT MUCH CONCRETE OUT THERE.
13 SO, AGAIN, WE HAVE THAT CAPACITY.

14 Q DO YOU HAVE THE CAPACITY TO OBSERVE AN
15 ENTIRE WING?

16 A I THINK THAT'S PROBABLY ABOUT WHERE WE'RE
17 AT ON THE MENU. SO I THINK WE'RE GOING TO BOUND. I
18 THINK THAT'S RIGHT WHERE WE'RE AT. SO WE COULD
19 CERTAINLY -- AND AGAIN, YOU KNOW, IT'S WING-WING
20 EQUIVALENT. BUT AN OPERATION THAT SIZE WE COULD -- WE
21 COULD OBSERVE.

22 Q COULD YOU OBSERVE TWO WINGS?

23 A PROBABLY WOULD BE PUSHING IT. I THINK I
24 WOULD BE -- I WOULD BE UNCOMFORTABLE WITH THAT.

25 Q SO JUST THE PHYSICAL INFRASTRUCTURE YOU'VE
26 GOT AT EDWARDS RIGHT NOW COULD OBSERVE A WING BUT BEYOND
27 THAT IS IFFY?

28 A I THINK WE COULD ACTUALLY PHYSICALLY PUT

1 THEM ON THE BASE. THAT'S NOT AN ISSUE. WE'VE
2 ACTUALLY -- BELIEVE IT OR NOT, DESPITE THAT VERY LARGE
3 AIRSPACE, I THINK WE'D RUN INTO AIRSPACE ISSUES IF YOU
4 BROUGHT TWO IN. A SINGLE WE COULD PROBABLY MANAGE.

5 **Q** OKAY.

6 **A** I GUESS I SHOULD SAY A SINGLE WE COULD
7 MANAGE.

8 **Q** AND SO AS I UNDERSTAND IT WHAT YOU'RE --
9 FOR EDWARDS, THE POTENTIAL GROWTH IS BASED ON THE -- THE
10 POTENTIAL FOR GROWTH IS BASED ON THE ATTRIBUTES THAT YOU
11 DISCUSSED, WHICH WERE -- WHICH INCLUDED LACK OF
12 ENCROACHMENT, SIZE OF THE AIRSPACE, YOUR INFRASTRUCTURE,
13 YOUR PROXIMITY TO OTHER RANGES, AND YOUR NONEXCLUSIVE
14 AIRSPACE.

15 DID I MISS ANYTHING?

16 **A** WEATHER.

17 **Q** AND WEATHER. THANK YOU.

18

19 (PAUSE IN THE PROCEEDINGS.)

20

21 **BY MR. DUBOIS:**

22 **Q** WHAT TEST MISSIONS CAN YOU TALK ABOUT THAT
23 ARE LIKELY TO COME TO EDWARDS OVER THE NEXT FEW YEARS?

24 **A** WELL, CERTAINLY WE'LL CONTINUE TO TEST THE
25 F-35. WE WILL HAVE TO REPLACE THE B-52. SO YOU WILL --
26 THAT REPLACEMENT PROGRAM WILL HAVE TO EVENTUALLY BE
27 TESTED.

28 WE ARE TESTING KC-46, WILL BE COMING AS

1 WELL, ALTHOUGH MUCH OF THAT TESTING WILL BE DONE IN
2 SEATTLE, AND WE WILL BE TRANSFERRING A PORTION OF THAT
3 TESTING DOWN TO EDWARDS AS WELL.

4 **THE COURT:** MR. KUHS.

5 **MR. KUHS:** YEAH, YOUR HONOR. I WANTED TO
6 INTERPOSE AN OBJECTION, AND I'M NOT SURE WHETHER THIS IS
7 THE APPROPRIATE TIME. BUT WHEN I TOOK THE GENERAL'S
8 DEPOSITION, I WAS NOT ALLOWED TO GET INTO FUTURE GROWTH.
9 THE UNITED STATES ASSERTED A PRIVILEGE AND SAID THAT
10 THEY WOULD NOT PRESENT ANY EVIDENCE RELATED TO POTENTIAL
11 FUTURE MISSIONS AT EDWARDS.

12 AND I WOULD LIKE TO QUOTE THE PASSAGE. THE
13 QUESTION WAS, "ARE THERE ANY AREAS OF GROWTH WHICH ARE
14 NOT JUST POTENTIAL BUT REAL?" AND AT THAT POINT THERE
15 WAS PRIVILEGE ASSERTED AND PROMISED ME THAT WE WOULDN'T
16 GET INTO THAT ISSUE AT THIS TRIAL.

17 **THE COURT:** OKAY. MR. DUBOIS.

18 **MR. DUBOIS:** I DON'T THINK THAT WE'VE TALKED ABOUT
19 ANYTHING MORE THAN -- THE QUESTION THAT WAS ASKED WAS
20 SPECIFIC IN DEPOSITION, WAS WHETHER THERE WERE SPECIFIC
21 THINGS THAT WERE SLATED TO COME. AND I THINK THAT WE'RE
22 ONLY TALKING ABOUT --

23 **THE COURT:** WELL, I JUST HEARD A COUPLE SPECIFIC
24 THINGS FROM THE GENERAL.

25 **MR. DUBOIS:** BUT HE DIDN'T -- WELL, YES. OKAY.

26 **THE COURT:** SO THE OBJECTION IS SUSTAINED UNLESS
27 YOU HAVE --

28 **MR. DUBOIS:** NO. THAT'S FINE.

1 **THE COURT:** -- SOME BASIS FOR GOING INTO THOSE
2 AREAS.

3 **MR. DUBOIS:** THAT'S ALL RIGHT.

4 **MR. KUHS:** I'D MOVE TO STRIKE THE RESPONSE TO THE
5 QUESTION.

6 **THE COURT:** I WON'T STRIKE IT. THERE'S ALREADY
7 BEEN TESTIMONY ABOUT THE B-52 IN ANSWERS, SO FOR
8 WHATEVER IT'S WORTH.

9 **MR. KUHS:** I UNDERSTAND.

10 **BY MR. DUBOIS:**

11 **Q** WHEN PLANNING FOR THE FUTURE OF EDWARDS AIR
12 FORCE BASE, IS IT REALISTIC TO LIMIT YOUR VIEW TO FIVE
13 YEARS OR EVEN TEN YEARS?

14 **A** WHEN YOU'RE DISCUSSING -- WE TALKED A
15 LITTLE BIT ABOUT WAYS, ENDS, AND MEANS; RIGHT? SO WHEN
16 WE'RE DISCUSSING ABOUT ENDS, WE NEED TO PRESERVE A TEST
17 AND COMBAT SUPPORT CAPABILITY OUT FOR 50 YEARS. I --
18 FRANKLY, I DO NOT UNDERSTAND THE DISCUSSION OF WHY ANY
19 NEAR TERM PROGRAM TWO, THREE YEARS OUT IS MATERIAL AT
20 ALL, FRANKLY.

21 **Q** IS IT POSSIBLE TO PREDICT WITH CERTAINTY
22 THE DEMANDS FOR AIR FORCE TESTING AND NEEDS AND LOOKING
23 OUT 20 OR 30 YEARS?

24 **A** NO.

25 **THE COURT:** I THINK WE'RE GOING TO HAVE TO TAKE
26 OUR NOON RECESS AT THIS TIME.

27 **MR. DUBOIS:** I'VE ACTUALLY ONLY GOT ABOUT TWO
28 QUESTIONS AND WE'D BE DONE WITH THE GENERAL ON DIRECT IF

1 I --

2 **THE COURT:** OKAY. YOU HAVE EXACTLY ONE MINUTE AND
3 30 SECONDS.

4 **MR. DUBOIS:** DONE. YOU KNOW, ACTUALLY, YOUR
5 HONOR, I THINK THAT I COVERED ALL THE MATERIAL I NEED TO
6 COVER; SO WE WILL STOP HERE.

7 **THE COURT:** ALL RIGHT.

8 **THE WITNESS:** I JUST HEARD ONE OF MY STAFF MEMBERS
9 SAY THAT.

10 **THE COURT:** WE WILL RESUME AT 1:00 O'CLOCK. WE'LL
11 TAKE A ONE HOUR LUNCH BREAK. AS YOU KNOW, WE'RE GOING
12 TO HAVE TO RECESS AROUND 3:30 THIS AFTERNOON; SO WE
13 EXPECT TO GO FROM 1:00 O'CLOCK UNTIL 3:30. WE MAY NOT
14 EVEN TAKE A BREAK BETWEEN THAT PERIOD OF TIME.

15 **MR. DUBOIS:** THAT'S FINE, YOUR HONOR.

16 **THE COURT:** SO IF YOU COULD LINE UP YOUR DUCKS.

17 **MR. DUBOIS:** WE ARE DOWN TO CROSS-EXAMINATION,
18 WHICH I DO NOT CONTROL, FOR GENERAL BREWER.

19 **THE COURT:** WELL, CROSS-EXAMINATION IS THE LEAST
20 OF OUR CONCERNS HERE THESE DAYS.

21 SO LET'S TAKE A ONE HOUR LUNCH BREAK, OKAY?

22 **MR. DUBOIS:** THANK YOU.

23 **THE COURT:** THANK YOU VERY MUCH. WE'LL BE IN
24 RECESS UNTIL 1:00 O'CLOCK.

25

26 (NOON RECESS WAS TAKEN UNTIL

27 1:00 P.M.)

28

1 CASE NUMBER: JCCP4408
2 CASE NAME: ANTELOPE VALLEY GROUNDWATER
3 LOS ANGELES, CALIFORNIA FEBRUARY 11, 2014
4 DEPARTMENT 1 HON. JACK KOMAR
5 REPORTER: RHONA S. REDDIX, CSR 10807
6 TIME: P.M. SESSIONS
7 APPEARANCES: (SEE TITLE PAGE.)
8
9

10 THE COURT: ALL RIGHT. I THINK WE CAN RESUME.
11 THE GENERAL'S IN THE WITNESS BOX, STILL UNDER OATH.
12 MR. DUBOIS HAS CONCLUDED HIS DIRECT EXAMINATION. WHO IS
13 GOING TO CROSS-EXAMINE?

14 MR. KUHS: MR. KUHS, YOUR HONOR.

15 THE COURT: ALL RIGHT. PROCEED.
16

17 CROSS-EXAMINATION

18 BY MR. KUHS:

19 Q GOOD AFTERNOON, GENERAL BREWER.

20 A YES, SIR. HOW YOU DOING?

21 Q THANK YOU FOR COMING HERE TODAY.

22 A (INDICATING.)

23 Q THANK YOU FOR COMING HERE.

24 A OH, YOU'RE WELCOME.

25 Q YOU ARE THE CURRENT EDWARDS AIR FORCE BASE
26 COMMANDER?

27 A YES.

28 Q IS THERE A COMMANDING OFFICER AT THE BASE

1 THAT OUTRANKS YOU?

2 A YES.

3 Q AND WHAT IS HIS NAME?

4 A MAJOR GENERAL ARNOLD BUNCH.

5 Q AND WHAT'S THE DIFFERENCE IN COMMAND
6 AUTHORITY BETWEEN YOUR COMMAND AND GENERAL BUNCH?

7 A HE IS THE A.F.T.C. COMMANDER, WHICH IS THE
8 AIR FORCE TEST CENTER. AND AS WE DISCUSSED BEFORE, THE
9 AIR FORCE TEST CENTER IS COMPRISED OF THREE BASES, WHICH
10 IS EDWARDS AIR FORCE BASE, EGLIN AIR FORCE BASE AND
11 ARNOLD AIR FORCE BASE.

12 Q OKAY. AND AS I UNDERSTAND IT THEN, YOU
13 DON'T HAVE A ROLE, COMMAND ROLE IN THE OTHER TWO?

14 A THAT'S CORRECT. THAT'S CORRECT. I'M THE
15 INSTALLATION COMMANDER AT EDWARDS. TECHNICALLY, EVEN
16 THOUGH HE'S MY BOSS, HE'S ACTUALLY A TENANT ON MY BASE,
17 WHICH IS SORT OF WEIRD THAT YOUR BOSS IS A TENANT ON
18 YOUR INSTALLATION.

19 Q ANY THOUGHTS OF EVICTING HIM?

20 A I DON'T THINK THAT WILL WORK WELL.

21 Q IS EDWARDS AIR FORCE BASE THE LARGEST BASE
22 BY LAND MASS IN THE U.S. INVENTORY?

23 A SECOND LARGEST.

24 Q WHICH ONE IS THE LARGEST?

25 A EGLIN.

26 Q AND WHAT'S THE LAND MASS AT EGLIN?

27 A I'M NOT SURE.

28 Q DO YOU KNOW -- CAN YOU GIVE ME A MEASURE OF

1 HOW MUCH LARGER EGLIN IS THAN EDWARDS?

2 A IT IS NOT VERY MUCH LARGER. THEY'RE VERY
3 COMPATIBLE. THEY HAVE WAY MORE TREES, THOUGH.

4 MR. KUHS: YOUR HONOR, I'D LIKE TO HAVE MARKED FOR
5 IDENTIFICATION U.S. AIR FORCE EXHIBIT 221, WHICH HAS A
6 U.S. BATES STAMP NUMBER 43968. AND I'D LIKE --

7 THE COURT: ALL RIGHT. THAT'S IN THE FOLDER SO --

8 MR. KUHS: I DON'T KNOW THAT -- IT WASN'T IN MY
9 FOLDER. DID YOU FIND IT IN YOURS?

10 MR. DUBOIS: NO, IT'S NOT. YOUR HONOR, IT'S NOT
11 IN OURS I DON'T BELIEVE. AND IS IT --

12 THE COURT: I'M LOOKING AT THE ONE THAT'S ON THE
13 BOARD. IT'S THE SAME AS THE ONE IN MY FOLDER.

14 MR. DUBOIS: ALL RIGHT. THEY DID NOT ENDORSE THIS
15 AS AN EXHIBIT, BUT IT'S ONE WE ENDORSE, SO.

16 THE COURT: WELL, AT THIS POINT IT'S MARKED FOR
17 IDENTIFICATION. OKAY?

18 MR. KUHS: YOUR HONOR, WOULD YOU LIKE EXHIBIT FOR
19 IDENTIFICATION U.S. AIR FORCE NUMBER, OR WOULD YOU LIKE
20 MY CLIENT, TEJON RANCH, TO HAVE A UNIQUE NUMBER?

21 THE COURT: IF WE RETAIN THE AIR FORCE NUMBER, IT
22 WILL BE CONSISTENT IN MY BOOK.

23 MR. KUHS: WHY DON'T WE DO THAT THEN.

24 THE COURT: OKAY.

25 BY MR. KUHS:

26 Q GENERAL, TAKE A LOOK AT THE DOCUMENT THAT
27 I'VE HANDED YOU, WHICH IS AN EDWARDS AIR FORCE BASE
28 OVERVIEW, AND TELL ME WHETHER GENERALLY THAT DOCUMENT

1 LOOKS FAMILIAR TO YOU.

2 **A** I'VE NOT SEEN IT BEFORE, BUT IT LOOKS
3 CORRECT IN THAT.

4

5 (EXHIBIT 221, IDENTIFIED: OVERVIEW
6 OF EDWARDS AIR FORCE BASE.)

7

8 **BY MR. KUHS:**

9 **Q** OKAY. AND DO YOU HAVE YOUR LASER POINTER
10 WITH YOU?

11 **A** I DO.

12 **Q** IT LOOKS LIKE THE BASE IS DEFINED -- EXCUSE
13 ME -- DIVIDED UP INTO DISCRETE AREAS. WOULD YOU AGREE
14 WITH THAT?

15 **A** SO THESE INTERNAL LINES ARE -- I DON'T KNOW
16 WHO PUT THEM IN THERE. BUT, FOR EXAMPLE, I MEAN, THERE
17 IS NO LINE FOR FAMILY HOUSING AREA. THAT'S JUST WHERE
18 IT'S LOCATED. BUT, I MEAN, YOU CAN PUT LINES WHEREVER
19 YOU WANT IT, I GUESS.

20 **Q** I GUESS WHAT I'D LIKE TO KNOW, YOU SEE THE
21 AREA THAT'S IDENTIFIED AS FAMILY HOUSING AREA. DOES
22 THAT LOOK APPROXIMATELY WHERE PHYSICALLY THE HOUSING
23 FACILITIES ARE LOCATED ON THE BASE?

24 **A** YES.

25 **Q** AND THERE'S AN ARROW THAT SHOWS THE MAIN
26 BASE.

27 **A** YES.

28 **Q** AND DOES THAT APPEAR TO BE ACCURATE IN

1 TERMS OF LOCATION?

2 A YES.

3 Q NORTH OF THE MAIN BASE, IT SAYS D.F.R.C.

4 WHAT'S THAT?

5 A YES. THAT WOULD BE THE DRYDEN FLIGHT
6 RESEARCH CENTER, I GUESS IS WHAT THAT WOULD STAND FOR.

7 Q THAT'S NASA?

8 A THAT'S NASA, YES.

9 Q OKAY. AND NASA IS ALSO A TENANT ON YOUR
10 BASE; CORRECT?

11 A THAT'S CORRECT.

12 Q THERE'S A WRITTEN TENANT AGREEMENT WITH
13 NASA?

14 A IT'S EITHER A HOST-TENANT AGREEMENT OR A
15 NEW TERM CALLED AN S.O., WHICH IS INTERSERVICE
16 AGREEMENT, BUT ONE OF THE TWO, YES.

17 Q OKAY. AND ACROSS THE DRY LAKES THEN WE SEE
18 THE AREA DESIGNATED A.F.R.L.

19 A YES.

20 Q AND WHAT GOES ON OVER AT THE A.F.R.L.?

21 A AGAIN, THAT WAS THE AIR FORCE RESEARCH LAB
22 AND, AGAIN, RESEARCH PRIMARILY FOR ROCKET PROPULSION.

23 Q IS THERE AN AREA CALLED "NORTH BASE"?

24 A NORTH BASE IS -- AGAIN, IT'S JUST ANOTHER
25 RUNWAY COMPLEX. IT'S RIGHT ABOUT HERE.

26 Q THE NORTH END OF THE DRY LAKE?

27 A YES, SIR.

28 Q AND WHAT GOES ON AT THE NORTH BASE?

1 **A** IT IS -- WE DO SOME MAINTENANCE ACTIVITIES
2 UP THERE. WE ALSO HAVE -- IT'S A PRIME PLACE FOR
3 LOCATING TENANTS, OR TRANSIENT WORK, RATHER.

4 FOR EXAMPLE, RECENTLY HAD A TEST THAT
5 WAS -- GRAY EAGLE, I BELIEVE, WAS THE NAME OF IT, BUT IT
6 WAS THE ARMY VERSION OF A PREDATOR REAPER. WE BROUGHT
7 THAT TEST IN. THEY OPERATED THERE FOR ABOUT TWO YEARS
8 OUT OF NORTH BASE. THAT PROGRAM'S LEFT. SO WE USE IT
9 AS A FLOW SPACE AS WELL, AS PROJECTS COME IN AND OUT, AS
10 TEST PROGRAMS COME AND GO.

11 **Q** IS THERE AN AREA ON THE BASE WHICH IS KNOWN
12 AS CONTRACTORS' ROW?

13 **A** CONTRACTORS' ROW. I'M NOT FAMILIAR WITH
14 THAT TERM.

15 **Q** THAT ONE OF THE OTHER WITNESSES, AT LEAST
16 IN DEPOSITION, HAD DESCRIBED AN AREA WHERE CONTRACTORS
17 WHO ARE ON THE BASE TO DO WORK, CONSTRUCTION ACTIVITIES,
18 PARK THEIR TRAILERS, CONSTRUCTION TRAILERS, THOSE SORTS
19 OF THINGS.

20 **A** I'M SURE THERE ARE. THERE ARE A COUPLE
21 PLACES -- MR. JUDKINS, AS OUR BASE C.E., WOULD BE
22 PROBABLY BETTER TO TELL YOU. BUT WE DO HAVE A SMALL
23 PLACE WHERE WE DO PARK VEHICLES WHEN CONSTRUCTION GOES
24 ON, BUT I'M NOT AWARE OF ANY LARGE CONTRACTOR ROW. SO
25 I'M NOT FAMILIAR WHAT THAT TERM MEANS.

26 **Q** ARE YOU GENERALLY FAMILIAR WITH THE CHAIN
27 OF COMMAND?

28 **A** PARDON ME?

1 **Q** ARE YOU GENERALLY FAMILIAR WITH THE CHAIN
2 OF COMMAND IN THE AIR FORCE?

3 **A** I HOPE SO.

4 **Q** YOU'RE ALSO FAMILIAR WITH THE ORGANIZATION
5 OF THE DEPARTMENT OF DEFENSE?

6 **A** YES.

7 **MR. KUHS:** OKAY. YOUR HONOR, MAY I APPROACH?

8 **THE COURT:** DO YOU HAVE AN EXHIBIT?

9 **MR. KUHS:** YES.

10 **THE COURT:** MARK IT FOR IDENTIFICATION.

11 **MR. KUHS:** MARK IT AS TEJON -- MARK IT HAS TEJON 1
12 FOR IDENTIFICATION.

13 **THE COURT:** ALL RIGHT. MARK IT, AND YOU CAN
14 CERTAINLY SHOW IT TO THE WITNESS.

15

16 (EXHIBIT TEJON-1, MARKED.)

17

18 **MR. KUHS:** (INDICATING.) I HAVE ONE FOR YOU, YOUR
19 HONOR.

20 **THE COURT:** ALL RIGHT. THANK YOU.

21 **BY MR. KUHS:**

22 **Q** GENERAL, YOU MAY RECALL THAT THIS EXHIBIT
23 WAS PRESENTED DURING YOUR DEPOSITION.

24 **A** I DO.

25 **Q** AND IS IT YOUR TESTIMONY THAT THIS EXHIBIT,
26 TEJON-1, ACCURATELY REPRESENTS THE ORGANIZATIONAL --
27 EXCUSE ME -- ORGANIZATION OF THE DEPARTMENT OF DEFENSE?

28 **A** IT APPEARS ACCURATE.

1
2 (EXHIBIT NUMBER TEJON 1, IDENTIFIED:
3 DEPARTMENT OF DEFENSE
4 ORGANIZATION.)
5

6 **BY MR. KUHS:**

7 **Q** WE'VE HAD TESTIMONY ON THIS SUBJECT BEFORE,
8 BUT NASA IS NOT PART OF THE DEPARTMENT OF DEFENSE;
9 CORRECT?

10 **A** THAT'S CORRECT.

11 **Q** A CIVILIAN ORGANIZATION?

12 **A** WELL, IT'S A FEDERAL ORGANIZATION. SO I
13 DON'T KNOW WHAT YOU MEAN BY "CIVILIAN." BUT IT'S NOT A
14 MILITARY ORGANIZATION. THAT'S CORRECT.

15 **Q** AND THEY HAVE A DIFFERENT COMMAND
16 STRUCTURE?

17 LET ME GO AT IT THIS WAY: YOU'RE FAMILIAR
18 WITH THEIR MANAGEMENT COMMAND STRUCTURE?

19 **A** I AM NOT OTHER THAN -- I MEAN IT'S NOT PART
20 OF THE SECRETARY OF DEFENSE'S ORGANIZATION, IF THAT'S
21 WHAT YOU'RE REFERRING TO.

22 **Q** ARE THERE OTHER TENANTS ON EDWARDS AIR
23 FORCE BASE THAT YOU'RE AWARE OF?

24 **A** THERE ARE.

25 **Q** WHAT ARE THEY?

26 **A** SO THERE ARE ONLY REALLY TWO LARGE TENANTS
27 THAT ARE ANY SIGNIFICANCE; RIGHT? ONE IS NASA, THAT
28 YOU'RE FAMILIAR WITH. AIR FORCE RESEARCH LAB IS A

1 TENANT EVEN THOUGH THAT'S EVEN -- NOT ONLY PART OF THE
2 AIR FORCE, IT'S PART OF OUR MAJOR COMMAND BUT STILL A
3 TENANT BECAUSE IT'S NOT PART OF THE TEST WING ITSELF.

4 AND THEN WE HAVE A NUMBER OF SMALLER
5 TENANTS. WE HAVE, YOU KNOW, A SINGLE BUILDING FOR THE
6 F.A.A. WE HAVE A -- WE HAVE AFOTEC, WHICH IS THE AIR
7 FORCE OPERATIONAL TEST AND EVALUATION CENTER, HAS A
8 SMALL TENANT, ONE BUILDING TYPE TENANT.

9 LET'S SEE. WHAT ELSE? ALSO WE HAVE A
10 SCHOOL ON BASE, THOUGH THAT RELATIONSHIP IS SLIGHTLY
11 DIFFERENT THAN A TRADITIONAL HOST-TENANT ARRANGEMENT.
12 AND, AGAIN, A NUMBER OF SMALL ONES, BUT THESE ARE ALL
13 RELATIVELY VERY SMALL TENANT ORGANIZATIONS.

14 Q ARE YOU GENERALLY REQUIRED TO FOLLOW THE
15 ORDERS OF THE PRESIDENT OF THE UNITED STATES?

16 A I THINK THAT'S THE OATH. WE CAN REPEAT IT
17 IF YOU LIKE. I KNOW IT BY HEART.

18 Q ARE YOU FAMILIAR WITH AIR FORCE
19 IMPLEMENTATION PLAN FOR A STRATEGIC SUSTAINABILITY
20 PERFORMANCE PLAN?

21 A SAY THAT AGAIN, ONE MORE TIME.

22 Q ARE YOU FAMILIAR WITH THE PLAN WHICH CALLS
23 FOR REDUCTIONS IN WATER USE BY THE AIR FORCE?

24 A ONLY CURSORY FAMILIAR.

25 Q WHAT'S YOUR UNDERSTANDING?

26 A SO THERE WAS -- AND, AGAIN, I DON'T KNOW
27 THE DATES, BUT THERE WAS A REQUIREMENT TO GO OUT AND
28 REDUCE WATER USAGE BY CERTAIN PERCENTAGES, BY CERTAIN

1 DATES. AND THAT'S THE TYPE THING THAT THE BASE CIVIL
2 ENGINEER WILL FLOW THROUGH COMMAND AND WILL GET TARGETS
3 AND THEN WE'LL EXECUTE TO THOSE TARGETS.

4 **MR. KUHS:** YOUR HONOR, I'VE MARKED FOR
5 IDENTIFICATION TEJON EXHIBIT 2. MAY I APPROACH THE
6 WITNESS?

7 **THE COURT:** YES.

8 **MR. KUHS:** I HAVE ONE FOR YOUR HONOR.

9 **THE COURT:** ALL RIGHT.

10 **MR. KUHS:** (INDICATING.)

11 **THE COURT:** THANK YOU.

12 **BY MR. KUHS:**

13 **Q** GENERAL BREWER, THIS IS AN EXCERPT FROM A
14 U.S. AIR FORCE DOCUMENT. YOU THINK YOU'VE SEEN THIS
15 DOCUMENT BEFORE?

16 **A** I HAVE NOT, AT LEAST NOT THAT I RECALL.

17
18 (EXHIBIT TEJON 2, IDENTIFIED:
19 EXCERPT FROM U.S. AIR FORCE
20 DOCUMENT.)
21

22 **BY MR. KUHS:**

23 **Q** LET ME DIRECT YOUR ATTENTION TO THE LAST
24 PAGE OF EXHIBIT TEJON 2. THERE'S A TABLE.

25 **A** YES.

26 **Q** AND ITEM 2 IN THAT TABLE SAYS "WATER
27 RESOURCE MANAGEMENT IMPROVEMENT." DO YOU SEE THAT?

28 **A** YES.

1 **Q** AND ITEM 2.1 TALKS ABOUT A REDUCTION BY
2 26 PERCENT OF POTABLE WATER CONSUMPTION.

3 **MR. DUBOIS:** YOUR HONOR, I'LL OBJECT TO THIS
4 DOCUMENT. IT'S OF UNCERTAIN PROVENANCE. THE GENERAL
5 HASN'T SEEN THIS BEFORE. IT'S AN EXCERPT OF HOW LARGE A
6 DOCUMENT, I DON'T KNOW. I DON'T SEE WHAT THE FOUNDATION
7 FOR THIS DOCUMENT IS AT THIS POINT.

8 **THE COURT:** WHY DON'T YOU MAKE ME AN OFFER OF
9 PROOF, MR. KUHS, AS TO WHERE YOU'RE GOING WITH THIS.

10 **MR. KUHS:** CERTAINLY. UNDER AN EXECUTIVE ORDER OF
11 THE PRESIDENT, THERE'S BEEN TESTIMONY FROM MR. JUDKINS,
12 I BELIEVE, THAT THERE WAS A MANDATE ISSUED BY THE
13 PRESIDENT TO REDUCE WATER CONSUMPTION WITHIN THE UNITED
14 STATES AIR FORCE, POTABLE WATER FROM THE BASE, YEAR
15 2007, OF 26 PERCENT BY YEAR 2020, AND AS TO INDUSTRIAL
16 AND IRRIGATION WATER, A REDUCTION OF 20 PERCENT FROM
17 2010 LEVELS BY BASE YEAR 2020. SO IT EQUATES TO
18 2 PERCENT PER YEAR MANDATED REDUCTION WATER USE BY THE
19 AIR FORCE.

20 **THE COURT:** WELL, THIS WITNESS, THOUGH, HAS SAID
21 HE DOESN'T HAVE ANY FAMILIARITY WITH THIS DOCUMENT.

22 **MR. KUHS:** YEAH. AND I WAS TRYING TO LAY THE
23 FOUNDATION TO ESTABLISH WHETHER OR NOT THIS DOCUMENT
24 REFRESHED HIS RECOLLECTION AS TO THOSE POLICIES.

25 **THE COURT:** WHY DON'T YOU ASK THAT QUESTION.

26 **MR. KUHS:** OKAY.

27 **BY MR. KUHS:**

28 **Q** TAKING A LOOK AT THE LAST PAGE OF EXHIBIT

1 TEJON 2, GENERAL BREWER, DOES THAT REFRESH YOUR
2 RECOLLECTION AT ALL AS TO THE PRESIDENTIAL MANDATE FOR
3 REDUCED WATER CONSUMPTION?

4 **A** NOT ANY FURTHER THAN WHAT I'VE MENTIONED.
5 AND I'LL JUST SAY, SO THE WAY THIS WOULD WORK OUT TO AN
6 INSTALLATION COMMANDER, WHETHER IT'S THIS OR -- YOU
7 KNOW, WE GET GOALS FOR POWER REDUCTION, MANY TYPES OF
8 REDUCTION GOALS THAT COME IN, SQUARE FOOTAGE REDUCTIONS.

9 **THE COURT:** SO THE ANSWER IS NO, IT DOES NOT
10 REFRESH YOUR RECOLLECTION?

11 **THE WITNESS:** IT DOES NOT.

12 **THE COURT:** ALL RIGHT. NEXT QUESTION.

13 **BY MR. KUHS:**

14 **Q** YOU USED THE TERM THIS MORNING OF
15 "MISSION." DO YOU RECALL USING THAT TERM?

16 **A** I'M -- NO, BUT I'M SURE I DID. THAT'S A
17 COMMON TERM.

18 **Q** WHAT DO YOU UNDERSTAND THE TERM TO MEAN
19 WHEN YOU USE THE PHRASE "MISSION"?

20 **A** SO MISSION FOR ME IS THAT IS THE TASK THAT
21 I'VE BEEN GIVEN TO ACCOMPLISH. SO THE MISSION OF THE
22 WING IS TO EXECUTE TESTS FOR THE NATION; SO THAT IS WHAT
23 OUR MISSION IS.

24 **Q** SO WOULD IT BE ACCURATE, THEN, THAT THE
25 BASE HAS A MISSION, A BROAD MISSION?

26 **A** IT DOES.

27 **Q** AND THEN MISSION IS ALSO USED TO DEFINE
28 DISCRETE PROJECTS WITHIN THE BASE, SUCH AS F-16 PROGRAM?

1 **A** YES. I MEAN, OF COURSE, THERE'S A CASCADE
2 OF MISSION, RIGHT, FROM THE AIR FORCE MISSION TO PROVIDE
3 AIR SPACE POWER ALL THE WAY DOWN TO A SPECIFIC FLIGHTS
4 MISSION, WHICH MAY BE TO TEST THE SPECIFIC ELEMENT OF A
5 PROGRAM.

6 **Q** SO IN YOUR MIND MISSION IS SORT OF
7 EQUIVALENT TO TASK? IT'S A TASK THAT YOU'VE BEEN GIVEN
8 ORDER TO ACHIEVE?

9 **A** IN A BROAD SENSE, YES.

10 **Q** OKAY. AND ARE YOU FAMILIAR WITH THE TERM
11 "BED DOWN"?

12 **A** YES.

13 **Q** WHAT DOES "BED DOWN" MEAN?

14 **A** "BED DOWN" TYPICALLY MEANS THE ACCEPTANCE
15 OF A MISSION. SO IF YOU'RE GOING TO BED DOWN -- SO, FOR
16 EXAMPLE, WE'RE IN THE PROCESS OF BEDDING DOWN THE JOINT
17 OPERATIONAL TEST TEAM FOR THE F-35 OPERATIONAL TEST
18 FORCE; SO THAT MEANS ENSURING THAT I HAVE HOUSING,
19 ENSURING THAT I HAVE CARE AND FEEDING, ENSURING I HAVE A
20 PLACE TO PARK THE AIRCRAFT, ENSURING THAT I HAVE A PLACE
21 TO REFUEL THE OPERATIONAL AIR -- TEST AIRCRAFT.

22 SO TO DO EVERYTHING TO ACCEPT THESE 15 PLUS
23 OPERATIONAL AIRPLANE -- OPERATIONAL TEST AIRPLANE THAT
24 ARE COMING IN, IS PART OF THAT BED DOWN PROCESS FOR THE
25 JOINT OPERATIONAL TESTING THAT WE'RE DOING RIGHT NOW.

26 **Q** AND IS IT GENERALLY NOT APPROPRIATE FOR AN
27 AIR FORCE OFFICIAL TO DISCUSS WHETHER A NEW MISSION
28 MIGHT RELOCATE TO EDWARDS UNLESS THERE'S PLANS ALREADY

1 APPROVED?

2 **A** WELL, IN TERMS OF DEFINITIVE THINGS, RIGHT.
3 SO IN TERMS OF TALKING TO, SAY -- SAY, NEXT WEEK THE
4 XX FIGHTER WING IS GOING TO BE SHOWING UP ON THIS BASE.
5 IN FRONT OF THE SECRETARY OF DEFENSE, SAYING THAT, THAT
6 WILL BE INAPPROPRIATE FOR ME TO DO. IN ORDER TO TALK
7 ABOUT GENERAL STRATEGIC TRENDS IS NOT INAPPROPRIATE FOR
8 ME TO DO.

9 **Q** AND AS A WING COMMANDER YOU HAD NO
10 CONTROL -- EVEN AS A BASE COMMANDER -- OVER WHETHER OR
11 NOT AN ADDITIONAL FIGHTER WING GETS ASSIGNED AT EDWARDS;
12 CORRECT?

13 **A** OBVIOUSLY, THAT WOULD BE A DECISION MADE AT
14 THE SECRETARY OR PRESIDENTIAL LEVEL, CONGRESSIONAL LEVEL
15 AS WELL.

16 **Q** AND ISN'T IT ALSO TRUE THAT YOU CAN'T SAY
17 WITH ANY DEGREE OF CERTAINTY WHAT MISSIONS WILL BE
18 PRESENT AT EDWARDS IN 30 YEARS?

19 **A** I THINK THAT'S THE EXACT POINT, IS THAT WE
20 CAN'T SAY WITH CERTAINLY EXACTLY WHAT'S GOING TO HAPPEN.
21 WE CAN LOOK AT GENERAL STRATEGIC TRENDS, AND WE CAN LOOK
22 AT GENERAL CAPABILITIES, THE FIVE OR SIX UNIQUE ITEMS
23 THAT WE TALKED ABOUT THAT EDWARDS HAS, FOR EXAMPLE.
24 THAT'S FOR SURE.

25 THE FACT THAT WE ARE IN, I WOULD ARGUE, A
26 GENERAL TREND, AS WE HAVE SEEN OVER THE PAST --
27 CERTAINLY THE PAST 15 YEARS OF CONSOLIDATION, WHAT THAT
28 MEANS IS, AS WE COME INTO CONSTRAINTS, WE BRING BACK

1 FORCES FROM OVERSEAS. WE NO LONGER HAVE AS MANY
2 OVERSEAS BASES.

3 CAN WE AFFORD TO MAINTAIN THE LEVEL OF
4 INFRASTRUCTURE WE HAVE IN A DECLINING ENVIRONMENT, WHICH
5 MEANS IF WE HAVE MISSIONS IN MULTIPLE PLACES, WE
6 CONSOLIDATE THEM IN ONE LOCATION IN ORDER TO HAVE
7 SAVINGS.

8 SO TO LOOK AT THOSE TYPE OF TRENDS OVER THE
9 NEXT 30, 40 YEARS, AGAIN, IT COMES TO -- YOU KNOW, WITH
10 CERTAINTY, WELL, WHAT DOES THAT MEAN? WELL, NO, BUT WE
11 CAN'T TELL ANYTHING FOR CERTAINTY.

12 I CAN TELL YOU WITH CERTAINTY THAT THERE'S
13 NO ONE WHO BUILT THE B-52 THAT THOUGHT WE'D STILL BE
14 FLYING IT TODAY AND HOPE TO FLY IT FOR ANOTHER 20 YEARS.
15 NO ONE THOUGHT THAT. LIKEWISE, I TELL YOU NO ONE
16 THOUGHT THAT WE'D BE PROBABLY DROPPING THE HYPERSONIC
17 TEST VEHICLES EITHER.

18 SO, AGAIN, WHAT WE CAN DO IS TALK ABOUT
19 GENERAL TRENDS AND MAKING SURE WE PRESERVE CAPABILITY.
20 SO I THINK WE WANT -- HAVE TO BE CAREFUL ABOUT GETTING
21 HUNG UP ON TALKING ABOUT THE THING; RIGHT? CAN YOU
22 ASSURE THAT THIS THING IS GOING TO BE HERE? NO, THAT'S
23 VERY DIFFICULT TO DO. BUT CAN YOU BE CERTAIN THAT THIS
24 FUNCTION IS GOING TO BE HERE? YES, I CAN BE PRETTY SURE
25 THE FUNCTION IS GOING TO BE HERE.

26 WHEN WE TALK ABOUT THE TEST FUNCTION,
27 THERE'S NO DOUBT IN MY MIND THAT 50 YEARS FROM NOW
28 EDWARDS AIR FORCE BASE WILL STILL BE PRIME IN THE TEST

1 FUNCTION. THERE IS NO OTHER PLACE TO DO IT.

2 Q BACK TO MY QUESTION. CAN YOU SAY WITH ANY
3 DEGREE OF CERTAINTY WHAT MISSIONS WILL BE PRESENT AT
4 EDWARDS IN 30 YEARS?

5 A WELL, AGAIN, THAT WOULD BE THE FUNCTION; SO
6 I WOULD SAY YES, AND THAT THIS TEST MISSION WILL BE HERE
7 30 YEARS FROM NOW. NO DOUBT ABOUT THAT. I MEAN, SHORT
8 OF THE BIG EARTHQUAKE HAPPENING.

9 Q CAN YOU SAY WITH ANY DEGREE OF CERTAINTY
10 WHAT MISSIONS WILL BE PRESENT AT EDWARDS IN 15 YEARS?

11 A CERTAINLY. THE TEST MISSION WILL BE HERE
12 15 YEARS FROM NOW.

13 Q LET ME READ FROM A PASSAGE IN YOUR PRIOR
14 DEPOSITION, GENERAL, AT PAGE 41, BEGINNING AT LINE 1.

15 "BUT TO GO AND SAY 15 YEARS FROM NOW THIS
16 PARTICULAR MISSION WILL BE HERE,
17 THAT LEVEL OF DETAIL FRANKLY IS
18 JUST NOT -- IT'S JUST NOT POSSIBLE.
19 IT IS JUST NOT POSSIBLE."

20 A THAT'S CORRECT. SO IF YOU'RE SITTING THERE
21 GOING, OKAY, WHAT LEVEL OF B-52 TESTING AM I GOING TO
22 HAVE 15 YEARS FROM NOW, I CAN'T TELL YOU THAT. ARE WE
23 GOING TO BE DOING TESTING HERE 15 YEARS FROM NOW AND
24 WILL THAT BE A B-2? WILL THAT BE THE B-1? WILL THAT BE
25 A NEW SYSTEM THAT WE HAVEN'T EVEN THOUGHT ABOUT COMING
26 OFF THE AIRCRAFT? I DON'T KNOW. BUT DO YOU THINK THAT
27 WE'RE NOT GOING TO BE DOING NATIONAL DEFENSE 15 YEARS
28 FROM NOW? OF COURSE WE ARE; RIGHT?

1 SO, I MEAN, TO GO DOWN THE FACT THAT, HEY,
2 DO YOU THINK THERE'S NOT GOING TO BE TESTING HERE
3 30 YEARS FROM NOW, WELL, OF COURSE THERE IS. THERE'S
4 GOING TO BE TESTING HERE 50 YEARS FROM NOW. NOW, TO GO,
5 IS THAT GOING TO BE THE MOD 1 OF THIS VERY -- WEAPON OR
6 THE MOD 30 OF THIS WEAPON OR A NEW WEAPON AND WHAT THE
7 NATURE OF THAT WEAPON IS GOING TO BE, THAT'S
8 CHALLENGING.

9 SO NOW WE CAN'T LOOK AT GENERAL TRENDS;
10 RIGHT? WE'RE GOING FASTER. WE'RE GOING FURTHER. WE
11 CAN SEE FARTHER. THAT MAKES AIR SPACE MORE CHALLENGED,
12 WHICH MAKES THE UNIQUE EDWARDS AIR SPACE MORE VALUABLE.
13 THAT, WE CAN SAY.

14 Q CAN YOU POINT TO ME ANY PLANNING DOCUMENT
15 WITHIN THE UNITED STATES AIR FORCE WHICH SHOWS WHAT THE
16 LONG TERM PLAN IS FOR EDWARDS AIR FORCE BASE?

17 A FOR EDWARDS AIR FORCE? WELL, WHAT'S LONG
18 TERM FOR YOU?

19 Q THIRTY YEARS.

20 A SO THERE'S NOT GOING TO BE A DOCUMENT THAT
21 SAYS THIRTY YEARS FROM NOW WE WILL BE TESTING THIS
22 AIRCRAFT, NO.

23 Q DO YOU HAVE A TWENTY-YEAR PLAN FOR EDWARDS?

24 A SO IF YOU'RE ARTICULATING A WRITTEN PLAN
25 THAT SAYS TWENTY YEARS FROM NOW THIS TYPE OF TESTING
26 WILL BE HAPPENING AT EDWARDS, NO.

27 Q DO YOU HAVE A TEN-YEAR PLAN?

28 A IT'S NOT PART OF OUR STRUCTURE. WE DON'T

1 WRITE THOSE DOCUMENTS.

2 Q DO YOU HAVE A FIVE-YEAR PLAN?

3 A I HAVE AN ACTION PLAN THAT IS MORE NEAR
4 TERM THAN THAT AT THE WING LEVEL. AT THE AIR FORCE
5 LEVEL, WHICH IS REALLY THE TYPE DOCUMENTS YOU'RE TALKING
6 ABOUT, THOSE DO EXIST AND THOSE ARE THE STRATEGIC
7 GUIDANCE. THOSE ARE IN THE DEFENSE PLANNING GUIDANCE.
8 THAT'S ALSO IN THE CHIEF'S VISION, WHICH IS ALL
9 DOWNLOADABLE IF YOU WANT TO GO GET IT.

10 FOR EXAMPLE, IN TERMS OF GLOBAL VIGILANCE,
11 THE CHIEF HAS PUT OUT HIS PRIORITIES FOR FUTURE WEAPON
12 SYSTEMS. ALL THOSE DOCUMENTS EXIST IN THE AIR FORCE.
13 BUT THE BASE LEVEL, WE DON'T PUT OUT 30-YEAR PLANNING
14 DOCUMENTS. IT'S JUST NOT HOW THE AIR FORCE DOES IT.
15 THOSE ARE ALL AIR FORCE LEVEL TYPE DOCUMENTATIONS.

16 Q LET ME READ FROM PAGE 45, LINE 14 OF YOUR
17 DEPOSITION TRANSCRIPT.

18 "QUESTION: YOU DON'T -- STATED A DIFFERENT
19 WAY, DO YOU KNOW OF ANY DOCUMENT
20 WHICH GIVES A FIVE YEAR OR TEN YEAR
21 OUTLOOK FOR EDWARDS AIR FORCE BASE?

22 "ANSWER -- "

23 MR. DUBOIS: OBJECTION, YOUR HONOR. THIS IS
24 NOT -- IF HE'S USING THIS DOCUMENT TO TRY AND REFRESH
25 THE GENERAL'S RECOLLECTION, HE NEEDS TO LET HIM SEE THE
26 DOCUMENT. OTHERWISE, HE'S GOT TO ESTABLISH THE --

27 THE COURT: MY UNDERSTANDING IS THERE WAS NO
28 QUESTION. HE WAS MERELY GOING TO READ FROM THE

1 WITNESS'S PRIOR TESTIMONY. IT DOESN'T REQUIRE ANY
2 RESPONSE FROM THE WITNESS. SO THE OBJECTION IS
3 OVERRULED AT THIS POINT.

4 **MR. KUHS:** (READING:)

5 "ANSWER: SO I CERTAINLY HAVE PLANNING
6 DOCUMENTS FOR BASE INFRASTRUCTURE
7 THAT LOOK OUT THAT FAR, BUT IN
8 TERMS OF LISTING MISSIONS THAT CAN
9 COME IN, NO. FOR EXAMPLE, MY C.E.
10 FOLKS HAVE PLANNING DOCUMENTS FOR,
11 YOU KNOW, HOW WE WOULD LIKE TO
12 ARRANGE FACILITIES, FOR EXAMPLE.

13 "QUESTION: OKAY. BUT NO FORECAST ON
14 FUTURE EXPANSION OF THE BASE?

15 "ANSWER: I'M NOT AWARE OF ANY DOCUMENTS."

16 **THE WITNESS:** THAT'S CORRECT. I THINK THAT'S WHAT
17 I JUST SAID. SO, AGAIN, THAT'S JUST NOT HOW WE -- WE
18 DON'T BUILD THOSE TYPE OF PLANNING DOCUMENTS AT THE BASE
19 LEVEL FOR 20, 30 YEARS OUT.

20 **THE COURT:** GENERALLY, YOU JUST DON'T HAVE TO
21 ANSWER OR RESPOND TO HIS READING OF THE DEPOSITION
22 UNLESS HE ASKS YOU A QUESTION.

23 **THE WITNESS:** OKAY.

24 **THE COURT:** YOUR TESTIMONY IS CLEAR.

25 **BY MR. KUHS:**

26 **Q** DO YOU HAVE ANY FAMILIARITY WITH THE
27 MILITARY'S BUDGETARY PROCESS?

28 **A** I DO.

1 **Q** YOU UNDERSTAND THAT IT'S A HIGHLY POLITICAL
2 PROCESS?

3 **A** I DO.

4 **Q** YOU UNDERSTAND THAT MILITARY SPENDING IS
5 DISCRETIONARY SPENDING?

6 **A** I DO.

7 **Q** YOU UNDERSTAND THAT THAT'S ONE OF THE CHIEF
8 REASONS IT IS DIFFICULT TO MAKE LONG-TERM PLANNING
9 DECISIONS BY THE MILITARY?

10 **A** I DO.

11 **Q** AND SO YOU'D MENTIONED THAT YOU HAD THE
12 CAPACITY FOR ANOTHER FIGHTER WING.

13 **A** YES, I BELIEVE WE DO.

14 **Q** IN TERMS OF CAPACITY, DO YOU MEAN SIMPLY
15 LAND MASS?

16 **A** NO.

17 **Q** ARE YOU INCLUDING IN CAPACITY AIR SPACE?

18 **A** YES.

19 **Q** ARE YOU INCLUDING HOUSING?

20 **A** HOUSING WOULD BE CHALLENGED, BUT IT WOULD
21 JUST -- WHAT YOU'RE DEBATING THERE IS HOW MANY FOLKS
22 LIVE ON AND OFF BASE. WHERE WE'RE AT RIGHT NOW, AGAIN,
23 WHEN YOU LOOK AT 50 YEARS OUT, IT DEPENDS ON THE
24 CONSTRUCT OF WHERE WE WOULD BE 30, 40, 50 YEARS FROM
25 NOW. IF THEY ROLLED IN TODAY, WITHOUT ANY FURTHER
26 CONSTRUCTION, WE WOULD HAVE TO BILLET THEM DOWNTOWN.

27 **Q** AND WHAT IS THE CURRENT AIR FORCE FIGHTER?

28 **A** SAY THAT AGAIN, ONE MORE TIME.

1 **Q** WHAT IS THE CURRENT AIR FORCE FIGHTER, THAT
2 IS, WHAT IS THE CURRENT JET THAT THE AIR FORCE IS
3 BUILDING?

4 **A** WELL, WE HAVE MANY THAT WE'RE CURRENTLY IN
5 SERVICE, IF THAT'S WHAT YOU'RE REFERRING TO -- F-16,
6 F-15, F-15E'S, F-22. OUR CURRENT ONE THAT WE'RE
7 DEVELOPING IS THE F-35.

8 **Q** WHAT'S THE COST OF AN F-35?

9 **A** I'M NOT SURE. YOU'D HAVE TO GO TO THE
10 PROGRAM OFFICE. I'M SURE IT'S SOMEWHERE AROUND 80 TO
11 \$100 MILLION, IN THAT BALLPARK.

12 **Q** AND WHEN YOU SAY FIGHTER WING, HOW MANY
13 AIRCRAFT ARE YOU REFERRING TO?

14 **A** I BELIEVE THEY USE THE 72 AIRCRAFT WING.

15 **Q** OUTSIDE OF DISCUSSIONS YOU MIGHT HAVE HAD
16 WITH THE UNITED STATES LAWYERS IN THIS CASE -- STRIKE
17 THAT.

18 DO YOU HAVE ANY WRITTEN DOCUMENT, PLANNING
19 DOCUMENT FOR EDWARDS AIR FORCE BASE THAT SUGGESTS
20 EDWARDS IS GOING TO GET A NEW FIGHTER WING?

21 **A** NO.

22 **Q** WOULD YOU AGREE THAT IT WOULD BE
23 SPECULATION TO SUGGEST OR FORECAST THAT EDWARDS AIR
24 FORCE BASE IS GOING TO GET A NEW FIGHTER WING?

25 **A** SO WHAT THROWS ME OFF, WHAT HESITATES ME
26 THERE A LITTLE BIT IS THE WORD "SPECULATION." SO,
27 AGAIN, WHAT I DISCUSSED EARLIER WAS, BASED ON WHERE I'M
28 SITTING, I LOOK AT WHAT I THINK ARE THE STRATEGIC TRENDS

1 THAT POTENTIALLY HAPPEN.

2 I THINK ABOUT THE NEED TO HAVE FORESIGHT,
3 JUST AS THEY DID AT EGLIN IN THE '40S, TO PROVIDE RANGE
4 CAPABILITY. AND I ASSESS THAT IT IS REASONABLE THAT WE
5 COULD 30 YEARS FROM NOW BE WANTING TO BED DOWN ANOTHER
6 WING EQUIVALENT TYPE CAPABILITY. I THINK THAT IS NOT
7 OUT OF THE REALM OF UNREASONABLENESS.

8 Q HOW ABOUT IN THE NEXT 30 YEARS? DO YOU
9 HAVE ANY INFORMATION TO SUGGEST IN THE NEXT 30 YEARS
10 EDWARDS AIR FORCE BASE IS GOING TO GET A NEW FIGHTER
11 WING?

12 A AGAIN, THAT ANSWER DOESN'T CHANGE WHETHER
13 IT'S 20 YEARS OR 50 YEARS FROM NOW. IF YOU'RE SAYING IS
14 THERE ANYTHING THAT'S GOING TO BE -- IS THERE A WRITTEN
15 DECISION THAT SAYS WE'RE GOING TO DO SOMETHING LIKE THIS
16 IN THE NEXT THREE TO FIVE YEARS, NO, I DON'T HAVE THAT.

17 MR. KUHS: NO FURTHER QUESTIONS. THANK YOU,
18 GENERAL.

19 THE WITNESS: SURE.

20 THE COURT: ANY OTHER CROSS-EXAMINATION?

21 ALL RIGHT. THANK YOU VERY MUCH, GENERAL.

22 MR. DUBOIS: ONE BRIEF QUESTION, YOUR HONOR.

23 THE COURT: REDIRECT?

24 MR. DUBOIS: YES, REDIRECT, JUST ONE BRIEF
25 QUESTION.

26

27

28

REDIRECT EXAMINATION

BY MR. DUBOIS:

Q GENERAL, YOU JUST USED THE TERM "WING EQUIVALENT." COULD YOU EXPLAIN WHAT YOU MEANT BY "WING EQUIVALENT"?

THE COURT: YOU KNOW, I COULD NOT HEAR YOUR QUESTION.

MR. DUBOIS: OH, I'M SORRY.

BY MR. DUBOIS:

Q I SAID, GENERAL, YOU JUST USED THE EXPRESSION "WING EQUIVALENT." CAN YOU PLEASE EXPLAIN WHAT YOU MEAN BY "WING EQUIVALENT"?

A RIGHT. SO YOU HAVE TO HAVE SOME TYPE OF PLANNING MECHANIZATION. SO WHEN I SAY "WING EQUIVALENT," I MEAN A MISSION THAT WOULD HAVE SOME IMPACT THAT IS ROUGHLY EQUIVALENT TO SETTING DOWN A WING. THIS COULD BE ANYTHING FROM A TRAINING WING -- A TRADITIONAL WING FROM LUKE AIR FORCE BASE COMES AND SITS DOWN ON THE WING -- OR IT COULD MEAN A VERY LARGE DEVELOPMENT PROGRAM. WE'VE HAD THOSE IN THE PAST, WHERE YOU'RE GOING TO BRING IN A VERY LARGE NATIONAL DEVELOPMENT PROGRAM THAT'S GOING TO BRING IN ABOUT AS MANY PEOPLE TO DO THAT DEVELOPMENT AS YOU WOULD HAVE IN SORT OF A FIGHTER WING.

WE'RE GOING TO BUILD A NEW SPACE PLANE. WE'RE GOING TO PUT THE SPACE PLANE AT EDWARDS SO WE CAN PROVIDE GLOBAL REACH TO THE PACIFIC AT HYPERSONIC SPEEDS. THAT MAY BE A VERY LARGE EFFORT. THAT

1 HYPERSONIC SPEED EFFORT TO BUILD A NEW SPACE PLANE --
2 THEY COULD DO THAT -- IS GOING TO BE PUT AT EDWARDS.
3 THAT'S GOING TO TAKE ABOUT THIS MUCH EFFORT. THAT
4 EFFORT IS ROUGHLY EQUIVALENT TO ABOUT THE IMPACT THAT A
5 TRAINING WING WOULD BE.

6 SO IT DOESN'T NECESSARILY HAVE TO BE A
7 TRAINING WING. IT'S JUST YOU NEED SOME MEASURE IN ORDER
8 TO DO SOME TYPE OF FUTURE FORECAST OF WHAT TYPE OF LEVEL
9 CAPACITY YOU NEED TO PRESERVE.

10 **Q** NOT UNLIKE -- I THINK WITH REGARD TO EGLIN
11 YOU DISCUSSED SOME SPECIAL FORCES UNITS COMING IN.
12 WOULD THAT BE SORT OF ON TERMS OF A WING EQUIVALENT?

13 **A** ABSOLUTELY. SO THE 7TH SPECIAL FORCES
14 GROUP IS A GROUP LEVEL EQUIVALENT. HERBERT FIELD GROWTH
15 WAS ACTUALLY THE WING LEVEL EQUIVALENT GROWTH IN THAT
16 AIR SPACE. THE 33RD FIGHTER WING WAS NOW A TRAINING
17 WING THAT ACTUALLY WAS A NO KIDDING TRAINING WING THAT
18 GOT PUT ON THE INSTALLATION, THAT STOOD ON THE
19 INSTALLATION. SO IT CAN VARY FROM, AGAIN, FROM THE
20 TRAINING WING TO SOMETHING EQUIVALENT. MOST LIKELY, AT
21 EDWARDS THAT'S PROBABLY GOING TO BE A VERY LARGE
22 DEVELOPMENT PROGRAM.

23 SO WHAT YOU HAVE TO WEIGH IS WHAT'S THE
24 LIKELIHOOD? AND THEN BASED ON PAST 50 YEARS; SO YOU
25 HAVE, YOU KNOW, WHAT WE HAVE DONE FROM THE '40S AND '50S
26 TO WHERE WE ARE NOW. LOOKING THAT FAR INTO THE FUTURE,
27 IS IT REASONABLE TO EXPECT THAT WE COULD HAVE IN THAT
28 TIME FRAME, THAT NEXT 50 YEARS, ANOTHER VERY LARGE

1 DEVELOPMENTAL EFFORT THAT COULD BE A WING EQUIVALENT
2 SIZE TO BE PUT IN AT EDWARDS? I THINK THAT'S VERY
3 REASONABLE POSSIBILITY.

4 **MR. DUBOIS:** ALL RIGHT. NOTHING FURTHER. THANK
5 YOU.

6 **THE COURT:** ONE QUESTION ALWAYS LEADS TO ANOTHER.

7

8 **RECROSS-EXAMINATION**

9 **BY MR. KUHS:**

10 **Q** GENERAL BREWER, YOU DON'T HAVE ANY 50-YEAR
11 DOCUMENTS WHICH SHOW THAT AN EXISTING WING IS GOING TO
12 MOVE TO EDWARDS; CORRECT?

13 **A** THAT'S CORRECT.

14 **Q** AND YOU DON'T HAVE ANY DOCUMENTS THAT
15 ESTABLISH THAT A NEW FIGHTER WING IS GOING TO MOVE TO
16 EDWARDS?

17 **THE COURT:** WELL, MR. KUHS, ISN'T THIS REALLY JUST
18 A REITERATION OF WHAT HE SAID EARLIER?

19 **BY MR. KUHS:**

20 **Q** YOU DON'T HAVE ANY PLANNING DOCUMENTS, SIR,
21 THAT SUGGEST A WING EQUIVALENT IS GOING TO MOVE TO
22 EDWARDS?

23 **A** NO. I WOULD ALSO SAY IN 1940 THEY HAD NO
24 DOCUMENTS THAT SAID WE WOULD BE DOING ANYTHING THAT WE
25 WERE DOING TODAY PLANNED.

26 AND, AGAIN, IT GOES BACK TO MY POINT THAT
27 YOU'RE CONFUSING THE THING WITH THE FUNCTION. AND THE
28 FUNCTION OF THE TEST WILL BE HERE, AND THE FUNCTION OF

1 DEVELOPMENT WILL BE HERE.

2 Q I UNDERSTAND THAT ANYTHING IS POSSIBLE.
3 BUT WHAT I WANT TO KNOW IS WHAT EVIDENCE DO YOU HAVE TO
4 SUPPORT THESE CONCLUSIONS?

5 A OKAY. SO I CAN GIVE THAT TO YOU AGAIN. SO
6 "EVIDENCE" IS THE WORD. BUT, AGAIN, THIS IS, AGAIN,
7 STRATEGIC THOUGHT IN TERMS OF WHAT YOU NEED TO PRESERVE
8 AND PREPARE FOR THE FUTURE, BASED ON THE UNIQUE
9 ATTRIBUTES OF EDWARDS THAT WE DISCUSSED. PRESSURES THAT
10 I SEE THE AIR FORCE UNDER IN TERMS OF BUDGETARY,
11 CONSOLIDATION PRESSURES; KNOWING -- UNDERSTANDING THE
12 AMERICAN NATURE OF WAR, WHICH IS A TECHNOLOGY BASED
13 NATURE OF WAR; UNDERSTANDING THE TRENDS OF WARFARE, IN
14 TERMS OF AERO WARFARE, MAY BE GREATER WING SIZE, GREATER
15 CAPACITY TO DO EVEN SIMPLE THINGS.

16 THAT'S WHAT I BASE THAT ON. SO IT'S NOT --
17 THAT'S WHERE I GOT HUNG UP ON THE WORD "SPECULATION."
18 SO IT'S NOT SPECULATION; IT'S AN EDUCATED JUDGMENT.

19 MR. KUHS: NO FURTHER QUESTIONS, YOUR HONOR.

20 THE COURT: NOW YOU CAN STEP DOWN, SIR.

21 THE WITNESS: THANK YOU.

22 THE COURT: THANK YOU VERY MUCH. YOU'RE EXCUSED.

23 THE WITNESS: THANK YOU.

24 THE COURT: YOU MAY CALL YOUR NEXT WITNESS.

25 THE WITNESS: IF IT'S OKAY, I'LL LEAVE THESE FOR
26 THE NEXT GUY.

27 THE COURT: THANK YOU VERY MUCH.

28 MR. DUBOIS: YOUR HONOR, I'LL MOVE TO ADMIT THE

1 EXHIBITS. WE CAN GO THROUGH THE LIST IF YOU'D LIKE.
2 IT'S 194, THE ONES THAT WE SUBMITTED AND DISCUSSED, WITH
3 GENERAL BREWER'S TESTIMONY.

4 **THE COURT:** ALL RIGHT. YOU ALSO WANTED
5 EXHIBIT 221?

6 **MR. KUHS:** YES.

7 **THE COURT:** ALL RIGHT. (INAUDIBLE).

8 **THE REPORTER:** I'M SORRY, YOUR HONOR?

9 **MR. KUHS:** WE'VE GOT 221 IN.

10 **THE COURT:** YES.

11 **MR. KUHS:** AND THE TEJON NUMBER 1, CHAIN OF
12 COMMAND.

13 **THE COURT:** YOU HAVE 1 AND 2.

14 **THE CLERK:** (SPOKE SOTTO VOCE.)

15 **MR. KUHS:** YES.

16 **MR. DUBOIS:** WAS THIS THE --

17 **THE COURT:** ALL RIGHT. YOU MAY SWEAR THE WITNESS.

18
19 (EXHIBIT NUMBERS TEJON 1, TEJON
20 2, 194, AND 221, RECEIVED.)
21

22 **THE CLERK:** YOU DO SOLEMNLY STATE THAT THE
23 TESTIMONY YOU MAY GIVE IN THE CAUSE NOW PENDING BEFORE
24 THIS COURT SHALL BE THE TRUTH, THE WHOLE TRUTH, AND
25 NOTHING BUT THE TRUTH, SO HELP YOU GOD?

26 **THE WITNESS:** I DO.

27 **THE COURT:** HAVE A SEAT.

28 STATE YOUR FULL NAME, SPELL IT, GIVE US

1 YOUR BUSINESS ADDRESS, PLEASE.

2 **THE WITNESS:** JAMES EARL JUDKINS. J-A-M-E-S,
3 E-A-R-L, J-U-D-K-I-N-S. AND MY BUSINESS ADDRESS IS
4 325 NORTH ROSAMOND BOULEVARD, EDWARDS AIR FORCE BASE,
5 CALIFORNIA 93524, SUITE NUMBER 1.

6 **THE COURT:** THANK YOU VERY MUCH.

7 PROCEED.

8

9 **DIRECT EXAMINATION**

10

11 **MR. LEININGER:** YOUR HONOR, WE'D LIKE TO BEGIN
12 TESTIMONY OF JAMES JUDKINS WITH EXHIBIT NUMBER 8, BATES
13 LABEL 45941.

14 **BY MR. LEININGER:**

15 **Q** MR. JUDKINS, THAT SHOULD BE IN THE TOP OF
16 YOUR PILE.

17 **A** YES, SIR, IT IS.

18 **Q** DO YOU RECOGNIZE THIS DOCUMENT?

19 **A** I DO.

20 **Q** WHAT IS THIS DOCUMENT?

21 **A** THIS IS MY BIO.

22

23 (EXHIBIT 8, IDENTIFIED: BIO OF
24 JAMES EARL JUDKINS.)

25

26 **BY MR. LEININGER:**

27 **Q** SO YOU CREATED THIS DOCUMENT?

28 **A** I PROVIDED INFORMATION AND SOMEONE ELSE

1 CREATED IT.

2 **Q** AND IS IT STILL TRUE AND CORRECT AND UP TO
3 DATE?

4 **A** IT WAS ACCURATE WHEN SUBMITTED. THERE IS
5 ONE MINOR CHANGE. THE GROUP HAS -- OR THE DIRECTOR HAS
6 DOWNSIZED FROM 532 TO 420 GOVERNMENT EMPLOYEES AND
7 MILITARY MEMBERS.

8 **THE COURT:** AND THE RECORD WILL ALSO SHOW THE
9 PICTURE OF SOMEONE WITH A BEARD.

10 **THE WITNESS:** YES, YOUR HONOR.

11 **THE COURT:** SAME PERSON.

12 **THE WITNESS:** A MUCH YOUNGER PERSON.

13 **THE COURT:** ALL RIGHT.

14 **BY MR. LEININGER:**

15 **Q** YOUR HONOR -- I'M SORRY.

16 MR. JUDKINS, LET'S BEGIN WITH YOUR FORMAL
17 EDUCATION. WHERE DID YOU GO TO SCHOOL?

18 **A** I GRADUATED -- I WAS AN HONOR GRADUATE FROM
19 THE UNITED STATES AIR FORCE ACADEMY. I GRADUATED AND
20 WAS COMMISSIONED IN JUNE 1974.

21 **Q** WHERE DID YOU RECEIVE YOUR COMMISSION?

22 **A** I'M SORRY, SIR?

23 **Q** WELL, LET'S BACK UP A SECOND. WHAT DID YOU
24 GRADUATE IN? WHAT WAS YOUR --

25 **A** I GRADUATED WITH A BACHELOR'S OF SCIENCE IN
26 CIVIL ENGINEERING, AND I WAS COMMISSIONED IN THE SAME
27 MONTH.

28 **Q** OKAY. AND WHEN DID YOU RECEIVE YOUR

1 COMMISSION?

2 **A** IN JUNE OF 1974.

3 **Q** AND DID YOU BEGIN -- IMMEDIATELY BEGIN YOUR
4 CAREER IN CIVIL ENGINEERING?

5 **A** YES, SIR, I DID. I HAD SEVERAL BASE LEVEL
6 ASSIGNMENTS AS A COMPANY GRADE OFFICER AND SEVERAL
7 HIGHER LEVEL ASSIGNMENTS AS A FIELD GRADE OFFICER.

8 YOUR HONOR, A COMPANY GRADE OFFICER IS A
9 LIEUTENANT THROUGH CAPTAIN, AND FIELD GRADE OFFICERS ARE
10 LIEUTENANT COLONELS AND MAJORS, AND THEN SENIOR OFFICERS
11 ARE COLONELS AND, OF COURSE, GENERAL OFFICERS. I'VE HAD
12 MANY, NUMEROUS ASSIGNMENTS. I BEGAN MY FIRST BASE LEVEL
13 ASSIGNMENT AT WRIGHT-PATTERSON AIR FORCE BASE AS AN
14 ENVIRONMENTAL PROTECTION OFFICER.

15 AFTER TWO YEARS, I WAS SELECTED TO ATTEND
16 GRADUATE SCHOOL, AND I OBTAINED MY MASTER'S OF SCIENCE
17 IN FACILITIES MANAGEMENT. I'VE ALSO HAD A BASE LEVEL
18 ASSIGNMENT IN CIVIL ENGINEERING, MANAGING INFRASTRUCTURE
19 AT TEMPELHOF CENTRAL AIRPORT IN WEST BERLIN DURING THE
20 COLD WAR, BEHIND THE IRON CURTAIN, AS WELL AS AT --
21 AGAIN, AT RAMSTEIN AIR BASE.

22 AS A FIELD GRADE OFFICER, I SERVED AS A
23 BASE CIVIL ENGINEER AT SHEMA AIR BASE AT THE VERY END
24 OF THE ALEUTIAN ISLANDS, AS WELL AS A STAFF OFFICER AT
25 HEADQUARTERS AIR FORCE, AND AS AN AIR FORCE EXECUTIVE
26 OFFICER FOR -- AT THE HEADQUARTERS OF THE ARMY CORPS OF
27 ENGINEERS.

28 DURING THIS TIME, I ALSO ATTENDED

1 PROFESSIONAL MILITARY EDUCATION. I WAS A DISTINGUISHED
2 GRADUATE FROM SQUADRON OFFICER SCHOOL FOR CAPTAINS, AND
3 I'M A GRADUATE OF THE AIR COMMAND AND STAFF COLLEGE FOR
4 FIELD GRADE OFFICERS.

5 CONTINUING ON WITH MY CAREER, AS A MORE
6 SENIOR OFFICER, I SERVED AGAIN AS A LIEUTENANT COLONEL,
7 AS THE BASE CIVIL ENGINEER AT BOEING AIR FORCE BASE, AS
8 I MAY HAVE SAID EARLIER, AND ALSO AT HEADQUARTERS USAF,
9 AGAIN, WORKING MORE STRATEGIC ISSUES AS A STAFF OFFICER.

10 AND THEN AS A COLONEL, I FINISHED MY AIR
11 FORCE CAREER AS THE INSTALLATION -- AS THE COMMANDING
12 OFFICER OF THE 95TH CIVIL ENGINEERING GROUP AT EDWARDS
13 AIR FORCE BASE.

14 Q WHAT YEAR WAS THAT?

15 A THAT WAS 2002.

16 Q IN ADDITION TO WHAT YOU JUST RECITED, HAVE
17 YOU RECEIVED ANY OTHER AWARDS AND RECOGNITIONS?

18 A I HAVE THE TYPICAL -- SEVERAL MILITARY
19 AWARDS. I RECEIVED THE LEGION OF MERIT AS A COLONEL.
20 THE MERITORIOUS SERVICE MEDAL I RECEIVED SEVEN TIMES,
21 THE AIR FORCE COMMENDATION MEDAL TWICE, AND I ALSO
22 RECEIVED THE ARMY OF OCCUPATION AWARD BECAUSE OF MY
23 ASSIGNMENT TO WEST BERLIN DURING THE COLD WAR. THE CITY
24 WAS STILL CONSIDERED TO BE OCCUPIED.

25 Q AND WHAT'S YOUR JOB TITLE NOW?

26 A I AM NOW THE BASE CIVIL ENGINEER AND
27 DIRECTOR OF CIVIL -- THE CIVIL ENGINEERING DIRECTOR AT
28 EDWARDS AIR FORCE BASE.

1 Q HOW LONG HAVE YOU HAD THAT POSITION?

2 A I'VE BEEN IN THIS POSITION AS A CIVILIAN
3 FOR TEN YEARS.

4 Q OKAY. IS THAT A SUPERVISORY POSITION?

5 A YES, SIR, IT IS.

6 Q HOW MANY PEOPLE DO YOU SUPERVISE?

7 A THERE ARE 420 INDIVIDUALS IN THE
8 ORGANIZATION. WE HAVE A VERY DIVERSE FUNCTION. FOR
9 THOSE OF YOU WHO MIGHT NOT BE FAMILIAR WITH THE AIR
10 FORCE INSTALLATION ENGINEERING FUNCTION, WE'RE THE
11 EQUIVALENT OF A DIRECTOR OF PUBLIC WORKS, IF YOU WILL,
12 FOR A SMALL CITY.

13 I'M RESPONSIBLE FOR EXPLOSIVE ORDNANCE
14 DISPOSAL; SO ANY TIME AN ORDNANCE GETS HUNG UP ON ONE OF
15 THE GENERAL'S AIRPLANES, I SEND TROOPS OUT TO SAVE THE
16 AIRCRAFT, ALSO TO CLEAR THE RANGE. I'M ALSO THE FIRE
17 MARSHAL; SO THE FIRE DEPARTMENT IS UNDER MY CONTROL.
18 I'M RESPONSIBLE FOR PROVIDING ALL FIRE SUPPRESSION, ALL
19 FIRE PROTECTION, AND EMERGENCY FIRE PROTECTION SERVICES.

20 THE EMERGENCY MANAGEMENT FUNCTION IS ALSO
21 MY RESPONSIBILITY; SO I SPEND TIME PREPARING FOR
22 CONTINGENCIES SUCH AS THE EARTHQUAKE, SUCH AS UTILITY
23 OUTAGES AND, GOD FORBID, AN AIRCRAFT ACCIDENT. SO WE'RE
24 PREPARING FOR THOSE KINDS OF FUNCTIONS ALL THE TIME, AND
25 WE DO EXECUTE THEM WHEN THEY HAPPEN.

26 ON THE INSTALLATION SIDE OF THE
27 INFRASTRUCTURE, I'M RESPONSIBLE FOR THE OPERATION AND
28 MAINTENANCE OF ALL THE FACILITIES AND ALL THE

1 INFRASTRUCTURE, TO INCLUDE WATER, NATURAL GAS,
2 ELECTRICITY, PROPANE, WASTE WATER COLLECTION IN CONTROL,
3 AS WELL AS TREATMENT. I HAVE A TREATMENT PLANT AT
4 EDWARDS AIR FORCE BASE.

5 WE OPERATE A LAND FILL; SO I'M RESPONSIBLE
6 FOR MANAGEMENT OF ALL THE SOLID WASTE, AS WELL AS SPACE
7 MANAGEMENT FOR ALL THE FACILITIES ON THE INSTALLATION.

8 **THE COURT:** I'M GOING TO ASK YOU TO SLOW DOWN JUST
9 A LITTLE SO THE REPORTER CAN KEEP UP WITH YOU AND HAVE
10 LESS STRESS. OKAY. THANK YOU.

11 **THE WITNESS:** YES, YOUR HONOR.

12 **BY MR. LEININGER:**

13 **Q** SO I JUST --

14 **A** SO ALSO, THERE IS ALSO A CAPITAL INVESTMENT
15 PROGRAM THAT I'M RESPONSIBLE FOR, ACTUALLY PLANNING FOR
16 AT MY LEVEL AND THEN EXECUTING. I'M TALKING ABOUT
17 EXAMPLE SUCH AS REPLACING OUR MAIN BASE RUNWAY, WHICH
18 YOU SAW IN A PREVIOUS PICTURE.

19 WE HAVE A NEW CLINIC, A NEW AEROMEDICAL
20 CLINIC, A NEW HEADQUARTERS BUILDING FOR THE FORMER AIR
21 BASE LANE. WE'VE DONE NUMEROUS ROAD IMPROVEMENT
22 PROJECTS, IMPROVING THE INFRASTRUCTURE ON THE
23 INSTALLATION, MAJOR IMPROVEMENTS TO OUR WASTE WATER
24 PLANT.

25 **Q** SO LET'S JUST CONCENTRATE ON WATER. SO YOU
26 BASICALLY HAVE JUST TOLD ME THAT YOU'RE PRETTY MUCH IN
27 CHARGE OF THE -- OR AT LEAST HAVE THE OVERSIGHT OVER THE
28 OPERATION AND MAINTENANCE OF THE WATER INFRASTRUCTURE.

1 **A** YES, SIR, I AM.

2 **Q** WHAT WERE YOU ASKED TO PROVIDE TESTIMONY
3 FOR THIS CASE AND TRIAL?

4 **A** I WAS ASKED TO PROVIDE TESTIMONY ON PAST
5 AND PRESENT PRODUCTION, AS WELL AS THE IMPACT ON
6 FLUCTUATING MISSION THAT IT HAS ON OUR WATER
7 REQUIREMENTS, AND AS WELL AS OUR CURRENT AND POSSIBLE
8 FUTURE WATER REQUIREMENTS.

9 **MR. LEININGER:** YOUR HONOR, I'D LIKE TO OFFER
10 MR. JUDKINS AS AN EXPERT IN FACILITIES MANAGEMENT,
11 INCLUDING WATER USE AT AIR FORCE FACILITIES.

12 **THE COURT:** AT THIS PARTICULAR BASE?

13 **MR. LEININGER:** AT EDWARDS AIR FORCE BASE, YES.

14 **THE COURT:** IS THERE ANY VOIR DIRE OF THE WITNESS?

15 ALL RIGHT. THE WITNESS IS QUALIFIED. HE
16 MAY SO TESTIFY.

17 **BY MR. LEININGER:**

18 **Q** CAN YOU DESCRIBE FOR ME THE CURRENT AND
19 RECENTLY PAST INSTALLATION FACILITIES AT EDWARDS AIR
20 FORCE BASE?

21 **A** ONE OF THE BEST WAYS YOU CAN VISUALIZE THE
22 INSTALLATION IS TO IMAGINE THE STATE OF TEXAS AND THEN
23 SQUASH IT AND ELONGATE IT. OKAY. ROUGHLY THE BASE IS
24 30 MILES WIDE, 17 MILES TALL, ABOUT 308,000 ACRES, PLUS
25 OR MINUS.

26 YOU CAN SEE -- IF YOU LOOK AT THE
27 INSTALLATION, YOU CAN SEE THAT THERE ARE PROBABLY FOUR
28 OR FIVE WHAT I WILL CALL COMPONENTS. YOU HAVE THE SOUTH

1 BASE COMPONENT, WITH THE BLACK LINE THERE. YOU HAVE THE
2 MAIN BASE COMPONENT, WHICH INCLUDES THE FLAT LINE AND
3 INDUSTRIAL AREA -- OR COMMERCIAL AREA, AS WELL AS THE
4 COMMUNITY AREA, WHICH IS THE HOUSING, PX AND THE
5 COMMISSARY. YOU HAVE THE AIR FORCE RESEARCH LABORATORY
6 ON THE NORTHEAST SIDE OF ROGERS LAKE BED. AND THEN YOU
7 HAVE THE NORTH BASE COMPLEX.

8 Q WILL YOU PLEASE PICK UP YOUR NEXT EXHIBIT.
9 I BELIEVE IT'S LABELED EXHIBIT 196, BATES LABEL 43918.
10 THAT'S IT.

11 A YES, SIR, I HAVE IT.

12
13 (EXHIBIT NUMBER 196, IDENTIFIED:
14 DOCUMENT BATES LABEL 43918.)
15

16 BY MR. LEININGER:

17 Q AND WHAT IS THIS EXHIBIT? JUST BEGIN WITH
18 THE FIRST PAGE, FIRST PAGE OF THE EXHIBIT.

19 A THIS IS A COVER SHEET TO GENERAL BREWER'S
20 MISSION BRIEFING.

21 Q OKAY. DID YOU ASSIST WITH ANY OF THE
22 INFORMATION THAT WAS PROVIDED IN THIS?

23 A YES, SIR. NOT NECESSARILY DIRECTLY, BUT I
24 OBSERVED AND APPROVED THE SUBMISSIONS. EMPLOYEES WHO
25 WORK FOR ME PROVIDED THE DATA.

26 Q LET'S TURN THEN TO -- WITHIN EXHIBIT 196,
27 TO BATES LABEL 50673.

28 A YES, SIR.

1 **Q** OH, I'M SORRY. I THINK WE DO THE NEXT
2 PAGE. OKAY. WHAT DOES THIS EXHIBIT SHOW?

3 **MR. KUHS:** YOUR HONOR, I'M GOING TO OBJECT. I
4 TOOK MR. JUDKINS' DEPOSITION. THIS DOCUMENT WAS NOT
5 PROVIDED TO ME IN DEPOSITION, NOR WERE THE FACTUAL
6 STATEMENTS.

7 **THE COURT:** WHAT'S THE BATES NUMBER AGAIN?

8 **MR. LEININGER:** 50673. THIS DOCUMENT, YOUR HONOR,
9 WAS PROVIDED TO COUNSEL. IT WAS PROVIDED TO COUNSEL
10 BECAUSE IT WAS AN EXCERPT FROM BRIGADIER GENERAL
11 BREWER'S BRIEFING STATEMENT.

12 IT'S BEING PROFFERED HERE BECAUSE, AS
13 MR. JUDKINS WILL TESTIFY -- OR HAS JUST TESTIFIED, HE
14 ASSISTED IN THIS PRODUCTION, AND HE WILL REITERATE THE
15 INFRASTRUCTURE FIGURES THAT APPEAR ON THIS DOCUMENT.

16 **MR. KUHS:** THIS WAS NOT PROVIDED TO ME IN
17 MR. BREWER'S DEPOSITION EITHER. THESE ARE NEW
18 DOCUMENTS. LOOK AT THE BATES STAMP NUMBER. THEY
19 POSTDATE OUR DISCOVERY SUBSTANTIALLY. THESE WERE POSTED
20 FOR THE FIRST TIME LAST WEEK.

21 **THE COURT:** MR. LEININGER?

22 **MR. LEININGER:** I'M SORRY, YOUR HONOR. ONE
23 MOMENT.

24 THE DOCUMENT ITSELF, THE WING MISSION
25 BRIEFING STATEMENT, HAS BATES LABEL NUMBER 43913. SO
26 TRYING TO DETERMINE -- THIS PARTICULAR BATES LABEL
27 NUMBER 5674 IS JUST A COPY. IT WOULD HAVE BEEN ALREADY
28 PROVIDED.

1
2 (COUNSEL SPOKE SOTTO VOCE.)
3

4 **MR. LEININGER:** EXCUSE ME ONE SECOND, YOUR HONOR.
5

6 (PAUSE IN THE PROCEEDINGS.)
7

8 **MR. LEININGER:** YOUR HONOR, WE CAN SUBSTITUTE
9 EXHIBITS HERE. (INDICATING.)
10

11 (COUNSEL SPOKE SOTTO VOCE.)
12

13 (PAUSE IN THE PROCEEDINGS.)
14

15 **THE COURT:** SO MR. KUHS?

16 **MR. KUHS:** YEAH, IT'S A NEW DOCUMENT. IF THE
17 WITNESS WANTS TO TESTIFY WITH THE FACTS, WE HAVE NO
18 PROBLEM WITH THAT. BUT THIS POWERPOINT PRESENTATION WAS
19 NOT PRESENTED TO ME.

20 **THE COURT:** WELL, THE DOCUMENT WON'T GO INTO
21 EVIDENCE. IT'S MARKED FOR IDENTIFICATION.

22 ASK YOUR QUESTIONS.

23 **MR. LEININGER:** ALL RIGHT.

24 **BY MR. LEININGER:**

25 Q SO LET'S TALK ABOUT INFRASTRUCTURE. AND
26 LET'S USE A DEMONSTRATIVE EXHIBIT WHICH -- AS THIS
27 REFLECTS, THIS IS A SUMMARY; IS IT NOT?

28 A YES, SIR, IT IS.

1 **Q** AND IS THIS A SUMMARY THAT YOU HELPED
2 CREATE OR PROVIDE THE INFORMATION FOR?

3 **A** IT IS.

4 **Q** AND WILL YOU PLEASE SUMMARIZE
5 INFRASTRUCTURE AT EDWARDS AIR FORCE BASE.

6 **A** 308,000 ACRES, 29,000 FEET OF CONCRETE
7 RUNWAYS, 59 MILES OF LAKE BED RUNWAYS, 11.7 MILLION
8 SQUARE FEET OF RAMP SPACE, 573 MILES OF ROADS, 270 MILES
9 OF ELECTRICAL LINES, 194 MILES OF WASTE WATER LINES,
10 72 MILES OF NATURAL GAS LINES, 3,800 STRUCTURES,
11 9.5 MILLION SQUARE FEET OF FACILITY SPACE, 1 MILLION
12 SQUARE FEET ARE IN HANGARS, AND 1.8 MILLION SQUARE FEET
13 OF TECHNICAL SUPPORT SPACE.

14 **Q** AND ARE YOU ROUGHLY FAMILIAR WITH THE
15 NUMBER OF PEOPLE EMPLOYED AT EDWARDS AIR FORCE BASE?

16 **A** YES, SIR.

17 **Q** WILL YOU SHARE THE NEXT SLIDE, PLEASE?
18 NEXT SLIDE. SORRY. OH, I'M SORRY.

19 SO THIS IS AGAIN A COMPILATION OF BASE
20 POPULATIONS; IS THAT CORRECT?

21 **A** YES, SIR, IT IS.

22 **Q** AND CAN YOU JUST SUMMARIZE THE NUMBER OF
23 PEOPLE AT EDWARDS AIR FORCE BASE?

24 **A** HOME BASE POPULATION, ACTIVE DUTY, 2,089;
25 CIVILIANS, 4,884; CONTRACTORS, 3,236; ASSOCIATES AND
26 NAF -- AND NAF STANDS FOR NON-APPROPRIATED FUNDS
27 ACTIVITIES, SUCH AS THE BASE EXCHANGE -- 237; THE BASE
28 EXCHANGE WAS 164; AND THERE ARE 2,714 FAMILY MEMBERS ON

1 THE INSTALLATION.

2 Q CAN WE HAVE THE NEXT SLIDE, PLEASE?

3 BATES -- THIS IS ALSO A SUMMARY SLIDE
4 BUT -- SO DOES THIS SUMMARIZE THE NUMBER OF THE
5 POPULATION? YOU CAN TELL ME WHAT THIS SUMMARIZES --

6 A THIS SUMMARIZES --

7 Q -- FOR THAT PURPOSE.

8 A THE NUMBER OF EMPLOYEES, MILITARY AND
9 ACTIVE DUTY AND CIVILIAN, FOR THE INSTALLATION.

10 Q CAN YOU READ THAT FIGURE?

11 MR. KUHS: YOUR HONOR, I'M GOING TO OBJECT TO THIS
12 EVIDENCE AS, NUMBER 1, IT HADN'T BEEN PRESENTED BEFORE
13 AND, NUMBER 2, IT'S OUTSIDE THE AREA OF EXPERTISE. HE
14 WAS NOT DESIGNATED FOR AN ECONOMIC DESIGNATION.

15 THE COURT: WELL, I THINK IT'S WITHIN HIS AREA OF
16 EXPERTISE. WHY WOULD IT NOT BE IF HE HAS THE
17 RESPONSIBILITIES AS DESCRIBED?

18 THE QUESTION YOU'RE ASKING IS THAT IT WAS
19 NOT PRESENTED?

20 MR. KUHS: THIS INFORMATION -- THIS WITNESS DID
21 NOT TESTIFY TO ECONOMIC IMPACT OF EDWARDS AIR FORCE BASE
22 AT HIS DEPOSITION. AND I ASKED HIM --

23 THE COURT: WELL, WE'RE GETTING SHEER NUMBERS OF
24 PEOPLE.

25 MR. KUHS: WELL, HE DID ON THE LAST SLIDE. NOW
26 HE'S SUGGESTING THAT -- WHAT HE'S TRYING TO DRIVE AT IS
27 ECONOMIC SYMPATHY IN THIS CASE AS OPPOSED TO TALKING
28 ABOUT WATER USE.

1 **THE COURT:** WELL, I THINK THAT THAT'S A -- LOOKS
2 LIKE AN ARGUMENTATIVE EXHIBIT.

3 **MR. LEININGER:** YOUR HONOR, IF WE COULD JUST ZOOM
4 IN ON THE FIRST BAR ACROSS THE TOP THERE, THAT GIVES THE
5 FIGURE AND THAT'S WHAT THIS EXHIBIT IS BEING USED FOR.

6 NOT THAT BAR, THE NEXT ONE DOWN, THE ONE
7 THAT SAYS "EDWARDS AIR FORCE BASE" ON THE RIGHT. THERE
8 WE GO. ALL RIGHT.

9 **BY MR. LEININGER:**

10 **Q** SO IS THAT A SUMMARY OF BASE POPULATION?

11 **A** YES, SIR, IT IS.

12 **MR. LEININGER:** MAY WE HAVE THE NEXT SLIDE,
13 PLEASE.

14 **THE COURT:** I'M SORRY. WHAT ARE THOSE NUMBERS?

15 **MR. LEININGER:** OH, I WAS -- WILL YOU READ THE
16 NUMBERS INTO THE RECORD, PLEASE?

17 **THE WITNESS:** I'M SORRY, YOUR HONOR. 10,808.

18 **THE COURT:** THAT'S PEOPLE?

19 **THE WITNESS:** YES, SIR.

20 **BY MR. LEININGER:**

21 **Q** WHAT WAS THE YEAR THAT THOSE FIGURES WERE
22 BASED UPON? DO YOU RECALL?

23 **A** NO, SIR, I DON'T, BUT THEY'RE FAIRLY
24 RECENT, IN THE LAST YEAR OR TWO.

25 **MR. LEININGER:** I'D NOW LIKE TO GO TO EXHIBIT 167,
26 YOUR HONOR.

27 SO, YOUR HONOR, WE'LL BE SHOWING A NUMBER
28 OF PHOTOS WHICH SHOW THE FACILITIES AT EDWARDS AIR FORCE

1 BASE, AND WE'LL COMMENCE WITH 168, BATES LABEL 43887.

2
3 (EXHIBIT NUMBER 168, IDENTIFIED:
4 PHOTOS OF EDWARDS AIR FORCE BASE
5 FACILITIES.)
6

7 **BY MR. LEININGER:**

8 **Q** WHAT IS THIS A PICTURE OF?

9 **THE WITNESS:** YOUR HONOR, I'LL NEED TO USE A
10 POINTER WITH THE INFORMATION. MAY I USE THE POINTER?

11 **THE COURT:** YES.

12 **MR. LEININGER:** CORRECTION, YOUR HONOR. IT'S
13 BATES LABEL 897.

14 **THE COURT:** 897?

15 **THE WITNESS:** NORTH IS TO THE TOP OF THE SCREEN.
16 AND WHAT YOU SEE AT THE VERY SOUTHERN PORTION IS THE
17 SOUTH BASE COMPLEX THAT I MENTIONED EARLIER. THE MAIN
18 BASE COMPLEX RIGHT HERE. THE FLIGHT LINE, THE RAMP
19 SPACE, THE AREAS WHERE THE TEST PROGRAMS RESIDE, THE
20 COMMERCIAL -- I MEAN THE SUPPORT AREA, THE ENGINEERING
21 AND ADMINISTRATIVE AREAS THERE, AND JUST BARELY A
22 PORTION OF THE COMMUNITY AREA.

23 YOU'LL SEE A PURPLE LINE RIGHT HERE. THAT
24 DEPICTS THE ROUTE OF RECLAIMED WATERLINE THAT COMES FROM
25 OUR WASTE WATER TREATMENT PLANT. YOU CAN SEE SOME BLUE
26 LINES THAT REPRESENT THE WATER SUPPLY LINES.

27 TAKING YOU BACK TO SOUTH BASE, JUST FOR A
28 MATTER OF SCOPE, THAT RUNWAY IS 300 FEET WIDE,

1 8,000 FEET LONG. AND, OF COURSE, WE HAVE THE RAMP RIGHT
2 HERE. THIS RUNWAY HERE, THE MAIN -- WHAT WE CALL THE
3 MAIN BASE RUNWAY, RUNWAY 22 LEFT, 04 RIGHT IS 300 FEET
4 WIDE EDGE TO EDGE AND 15,000 FEET LONG.

5 THE INSIDE RUNWAY, THE ASPHALT RUNWAY, IS
6 150 FEET WIDE AND 12,000 FEET LONG. THE TAXIWAYS REACH
7 ABOUT 5,000 FEET LONG. THE GENERAL POINTED OUT THE LAKE
8 BED ACCESS FOR THE MAIN BASE RUNWAY, AND WE ALSO HAVE IT
9 FOR THE SOUTH BASE RUNWAY.

10 THIS AREA RIGHT HERE IS WHERE THE TEST
11 PROGRAMS ARE. WE SET UP BASICALLY A CAMPUS CONCEPT, IF
12 YOU WILL. THE F-22 PROGRAM IS UP, RIGHT IN THIS AREA
13 RIGHT HERE. THE JOINT STRIKE FIGHTER HAS THIS COMPOUND
14 RIGHT IN THIS AREA RIGHT HERE.

15 MOVING ON DOWN, THE F-16S ARE IN THIS AREA
16 RIGHT HERE. THIS IS OUR MAIN MAINTENANCE HANGAR. IT'S
17 OVER 400,000 SQUARE FEET OF MAINTENANCE SPACE RIGHT
18 THERE. FIRE DEPARTMENT CENTRALLY LOCATED RIGHT THERE.
19 PAINT BARNs RIGHT IN THIS AREA HERE, ALONG WITH FUEL
20 SALES -- OR FUEL MAINTENANCE FACILITIES.

21 MOVING DOWN THIS DIRECTION WE HAVE -- THE
22 GLOBAL HAWK HANGARS ARE IN THESE FACILITIES RIGHT IN
23 HERE. FIGHTERS ARE DOWN AT THIS END OF THE RAMP RIGHT
24 HERE, AND THE FIGHTERS GO RIGHT AROUND IN HERE.

25 IF I COULD POINT OUT RIGHT THERE -- OOPS.
26 COULD YOU ZOOM IN RIGHT WHERE YOU WERE BEFORE? A LITTLE
27 BIT MORE. RIGHT THERE.

28 THAT'S A KC-135. THE WING SPAN'S 131 FEET.

1 **MR. LEININGER:** COULD WE HAVE THE NEXT SLIDE? I
2 THINK IT SHOWS IT A LITTLE BETTER.

3 **THE WITNESS:** GOOD. YOU CAN GET A BETTER PICTURE
4 OF IT SO YOU CAN GET AN IDEA AS TO THE VASTNESS OF OUR
5 RAMP SPACE.

6 **MR. LEININGER:** THE NEXT SLIDE, PLEASE.

7 **THE WITNESS:** OKAY. JUST A LITTLE MORE DETAIL ON
8 SOUTH BASE AS FAR AS ACCESS TO THE LAKE BED RIGHT THERE.

9 B-52S. THE WING SPAN OF A B-52 IS ABOUT
10 185 FEET, THEREABOUTS. B-52S RIGHT THERE. YOU CAN SEE
11 JUST HOW BIG OUR RAMPS ARE. AND, OF COURSE, THIS IS A
12 TAXIWAY THAT LEADS TO THE MAIN BASE RUNWAY.

13 A MAJOR HANGAR, A LARGE HANGAR RIGHT HERE
14 THAT WAS BUILT FOR THE B-2 PROGRAM. AND THEN WE HAVE
15 THE ENGINEERING SUPPORT SPACE RIGHT HERE.

16 AND YOU CAN POINT OUT -- I'LL POINT OUT
17 THAT YOU DON'T SEE A LOT OF GREEN IN ANY OF THESE
18 PICTURES THAT I'VE SHOWN YOU SO FAR.

19 **Q** NEXT SLIDE, PLEASE.

20 **A** THIS IS THE NASA DRIVING COMPLEX. BEGINS
21 RIGHT ABOUT HERE AND GOES UP TO RIGHT ABOUT HERE FOR
22 RAMP SPACE, AND THEN COMES OUT RIGHT AROUND WHERE I'VE
23 JUST DRAWN THE LINE. ROUGHLY, ABOUT 800 ACRES.

24 **Q** AND, MR. JUDKINS, WHERE IS THIS IN
25 RELATIONSHIP TO THE MAIN BASE AND THE SOUTH BASE?

26 **A** THIS IS LOCATED JUST NORTH OF WHERE THE
27 F-22S ARE.

28 **Q** ONCE AGAIN, YOU'RE ON THE WEST SIDE OF --

1 **A** WE'RE ON THE WEST SIDE OF THE LAKE BED.

2 **Q** WHAT IS THE --

3 **A** OH, THAT'S THE --

4 **Q** -- FIGURE OUT THERE?

5 **A** THE COMPASS ROADS? OKAY. WELL, WHEN
6 YOU'RE TAKING A LANDING ON THE LAKE BED, YOU NEED TO
7 KNOW WHERE THE WINDS ARE. I'M NOT A PILOT, BUT I DO
8 SKYDIVE; SO I KNOW ABOUT -- I'M FAMILIAR WITH THE NEED
9 TO KNOW WHERE THE WINDS ARE.

10 AND SO THE PILOT -- THE TOWER CAN TELL THE
11 PILOT, YOU KNOW, WHICH WAY THE WINDS ARE COMING FROM.
12 THE PILOT CAN CHECK AND SEE WHERE THAT DIRECTION IS ON
13 THIS COMPASS ROAD AND THEN LAND INTO THE WIND ON THE
14 LAKE BED.

15 **Q** SO LET'S GO BACK TO THE FACILITY. SO THIS
16 ENTIRE FACILITY IS -- I'M SORRY. THIS -- WHAT YOU'RE
17 DEPICTING HERE, AGAIN, FOR THE RECORD, IS?

18 **A** THE NASA DRYDEN RESEARCH CENTER COMPLEX.

19 **Q** JUST TO THE NORTH OF THE MAIN BASE?

20 **A** JUST TO THE NORTH OF THE MAIN BASE, YES,
21 SIR.

22 **Q** LET'S GO TO THE NEXT SLIDE, PLEASE.

23 **A** NOW, THIS IS A PICTURE OF BRANCH POND.
24 I'VE BEEN TO TWO REMOTES, SHEMYA, AT THE END OF THE
25 ALEUTIAN ISLANDS, AND EDWARDS AIR FORCE BASE. THIS POND
26 IS LOCATED NEAR THE SOUTH BOUNDARY OF THE INSTALLATION.
27 IT'S FED FROM GROUND WATER. IT'S A RECREATIONAL AREA.
28 PEOPLE CAN GET -- WELL, I WENT FISHING.

1 AND THAT'S RAFTING IN THIS AREA RIGHT IN HERE. THIS IS
2 A PICNIC AREA RIGHT HERE. AND CAN'T SEE THEM, BUT THE
3 WELL SHOULD BE RIGHT UP IN HERE, AND IT'S FED WITH
4 GROUND WATER.

5 Q THIS IS PART OF THE R. AND R. PROGRAM?

6 A IT'S PART OF THE R. AND R. PROGRAM FOR THE
7 MILITARY AND RETIREES.

8 Q AND I THINK WE HEARD GENERAL BREWER GIVE
9 THAT A DIFFERENT ACRONYM, THE RECREATIONAL USE OF THESE
10 FACILITIES.

11 A HE MIGHT HAVE USED THE EXPRESSION M.W.R.

12 Q AND WHAT DOES THAT STAND FOR?

13 A MORALE, WELFARE AND RECREATION.

14 Q COULD WE HAVE THE NEXT SLIDE, PLEASE.

15 A AGAIN, NORTH IS TO THE TOP OF THE SLIDE.
16 THIS DEPICTS OUR GOLF COURSE, AND IT SHOWS THE RECLAIMED
17 WATERLINE THAT CROSSES THROUGH THE GOLF COURSE AND THE
18 WASTE WATER TREATMENT PLANT ON ITS WAY TO THE STORAGE
19 TANK BEHIND OUR LAKE.

20 Q HOW IS THE GOLF COURSE WATERED?

21 A THE GOLF COURSE RECEIVES A MIXTURE OF
22 RECLAIMED AND POTABLE WATER, IF YOU WILL. THE RECLAIMED
23 WATER FROM THE WASTE WATER TREATMENT PLANT GOES TO A
24 1.5 MILLION GALLON STORAGE TANK ON A HILL BEHIND OUR
25 CLINIC. WE THEN USE GRAVITY TO FEED FROM THAT TANK
26 THROUGH OUR PURPLE PIPE OR OUR RECLAIMED WATER
27 DISTRIBUTION SYSTEM.

28 WE ONLY PRODUCE ABOUT HALF A MILLION

1 GALLONS A DAY OF RECLAIMED WATER, WHICH DOES NOT MEET
2 OUR IRRIGATION REQUIREMENTS; SO WE SUPPLEMENT THE
3 RECLAIMED WATER WITH GROUND WATER. SO YOU HAVE A
4 MIXTURE OF POTABLE, SITE GROUND WATER, AS WELL AS
5 PURCHASED WATER FROM AVEK, MIXED IN WITH THE RECLAIMED
6 WATER, WHICH IS THEN DISTRIBUTED THROUGHOUT THE
7 INSTALLATION.

8 THE WATER THAT GOES TO THE GOLF COURSE
9 COMES BACK FROM THE TANKS TO A POND WHICH IS RIGHT
10 AROUND HOLE NUMBER 17, AND THEN FROM THERE IT IS PUMPED
11 THROUGHOUT THE GOLF COURSE TO THE VARIOUS LOCATIONS, THE
12 TEES, THE GREENS AND THE FAIRWAYS.

13 Q AND, AGAIN, THIS IS PART OF THE M.W. --

14 A YES, SIR. THIS IS AN M.W.R. FUNCTION.

15 Q PART OF THE M.W.R. FUNCTION, STANDING FOR?

16 A MORALE --

17 MR. KUHS: ASKED AND ANSWERED.

18 THE COURT: I REMEMBER THE ANSWER. GO AHEAD.

19 NEXT QUESTION.

20 THE WITNESS: MORALE --

21 THE COURT: NEXT QUESTION.

22 BY MR. LEININGER:

23 Q BEFORE WE LEAVE THIS SLIDE, SO THIS PART
24 OF -- FOR LACK OF BETTER WORDS, OF RECREATIONAL
25 FACILITIES AT EDWARDS AIR FORCE BASE, DO YOU HAVE -- DO
26 YOU KNOW APPROXIMATELY WHAT THE DISTANCE IS FROM THIS
27 RECREATIONAL FACILITY TO ANOTHER GOLF COURSE?

28 A SIR, 35 MILES, THEREABOUTS.

1 AS I SAID EARLIER, I'VE HAD TWO REMOTES.
2 ONE WAS IN THE ALEUTIAN ISLANDS AND THE SECOND ONE WAS
3 HERE IN THE UNITED STATES AT EDWARDS AIR FORCE BASE. IF
4 YOU ARE ASSIGNED TO THE INSTALLATION AND YOU BRING YOUR
5 FAMILY WITH YOU, THEY ARE MORE THAN LIKELY GOING TO LIVE
6 ON THE INSTALLATION, AND YOU NEED TO HAVE -- YOU NEED TO
7 SUPPORT THE FAMILY.

8 AND SO AT LEAST THIS FUNCTION RIGHT HERE
9 IS, OF COURSE, RECREATIONAL FOR NOT ONLY THE FAMILY
10 MEMBERS AND THE ACTIVE DUTY MEMBERS, BUT THE AIRMEN WHO
11 ARE LIVING IN THE DORMS AND SOMETIMES, AS THE GENERAL
12 SAID, DON'T EVEN HAVE A CAR. SO IT'S DEFINITELY
13 SOMETHING THAT WE NEED FOR OUR QUALITY OF LIFE AT THE
14 INSTALLATION.

15 Q COULD I HAVE THE NEXT SLIDE, PLEASE?

16 AND MR. JUDKINS, CAN YOU MOVE THE MIC A
17 LITTLE CLOSER TO YOU, IF YOU WILL?

18 A OKAY.

19 Q THANK YOU.

20 A AGAIN, NORTH IS TO THE TOP. THIS IS OUR
21 GYMNASIUM. ATHLETIC FIELD RIGHT HERE FOR SOFTBALL. YOU
22 CAN SEE THE IRRIGATION SYSTEMS. YOU CAN SEE THE TRACK
23 AND THE FACT THAT WE DON'T HAVE ANY GRASS IN THAT AREA
24 RIGHT THERE.

25 THIS IS AN F-104 ENTRY, THAT'S ON A
26 PEDESTAL IN THE ENTRY TO THE GYMNASIUM AREA. WE'VE
27 TURNED OFF THE WATER TO THIS AREA, AND IF YOU LOOKED AT
28 IT TODAY, YOU WOULD SEE DEAD AND DYING GRASS.

1 OF COURSE, THE PARKING LOT RIGHT IN HERE.
2 THIS AREA RIGHT IN HERE IS, AGAIN, OUR AEROBIC CENTER.
3 THAT'S A RECREATIONAL FACILITY. AND, OF COURSE,
4 ADDITIONAL P.T. FUNCTIONS RIGHT HERE.

5 IT'S VERY HOT IN THE SUMMERTIME, VERY
6 BRIGHT; SO WHEN THE SQUADRONS ARE EXERCISING, THE
7 FLIGHTS ARE EXERCISING, THEY'LL EXERCISE IN THE SHADE
8 UNDERNEATH THOSE FACILITIES RIGHT THERE. AND, AGAIN,
9 THE BLUE LINES DEPICT THE WATER SUPPLY LINES TO THOSE
10 FACILITIES AND TO THE FIELD.

11 **MR. KUHS:** YOUR HONOR, I'M SORRY TO KEEP MAKING
12 THIS OBJECTION, BUT I FEEL A BIT LIKE A VICTIM HERE.

13 NONE OF THESE PHOTOS WERE PRODUCED DURING
14 MR. JUDKINS' DEPOSITION. THEY WERE ALL PRODUCED WITHIN
15 THE LAST WEEK. I'VE NEVER SEEN THEM BEFORE. I'VE NEVER
16 HAD AN OPPORTUNITY TO QUESTION MR. JUDKINS ON THEM. AND
17 I ALLOWED, BECAUSE OF THE CONSTRAINTS ON TIME,
18 MR. JUDKINS TO TESTIFY FROM MR. BREWER'S POWERPOINT
19 PRESENTATION, WHICH WAS NOT PRESENTED.

20 BUT AT SOME POINT WE GOT TO CALL A STOP TO
21 IT AND JUST LET HIM TESTIFY TO WHAT HE KNOWS BASED UPON
22 THE DISCOVERY PROCESS. IT'S JUST UNFAIR.

23 **MR. LEININGER:** WELL, YOUR HONOR, THE BATES LABEL
24 ON THESE DOCUMENTS ARE 43903, AND THE PRODUCTION OF
25 DOCUMENTS RECENTLY WERE DOCUMENTS IN 50,000'S; SO THESE
26 WERE PRODUCED AT AN EARLIER TIME. I THINK THE QUESTION
27 SEEMS TO BE, WERE THEY PRODUCED AT THE DEPOSITION?

28 **MR. KUHS:** NO, THAT'S NOT ACCURATE. YOUR HONOR, I

1 PURPOSEFULLY WENT TO THE COURT'S WEB SITE TO REVIEW THE
2 SUPPLEMENTAL RESPONSE BACK IN APRIL OF 2013, AND IT
3 INCLUDED DOCUMENTS 22890 THROUGH 43820. ALL OF THESE
4 ARE OUTSIDE OF THAT SEQUENCE.

5 **MR. LEININGER:** I -- EXCUSE ME. MR. KUHS, COULD
6 YOU GIVE THAT SEQUENCE AGAIN?

7 **MR. KUHS:** IT'S THROUGH 43890 [SIC].

8 **MR. LEININGER:** AND I BELIEVE THE REQUEST AT
9 DEPOSITION WAS TO PROVIDE ANY ADDITIONAL DOCUMENTATION.

10 **MR. KUHS:** THERE WAS TWO REQUESTS. THERE WAS AN
11 ORDER FROM THE COURT TO PRODUCE ANY DOCUMENTS YOU WERE
12 RELYING ON, AS A DISCOVERY ORDER, AND THEN I HAD A
13 DOCUMENT REQUEST AS PART OF MY DEPOSITION NOTICE FOR ANY
14 DOCUMENTS THAT THE EXPERT WAS RELYING ON. AND I HAVEN'T
15 SEEN THESE IN EITHER PRODUCTION, AND THAT'S MY PROBLEM.

16 **MR. LEININGER:** YOUR HONOR, WE'RE NOT QUITE --
17 WE'RE TRYING TO PINPOINT RIGHT NOW WHEN THESE WERE IN
18 FACT UPLOADED TO THE DISCOVERY DATABASE, BUT BASED UPON
19 THE BATES LABELING THAT IS ATTACHED TO THESE PHOTOS AND
20 BASED UPON MR. KUHS'S OWN STATEMENT, IT WAS SHORTLY
21 AFTER THE DEPOSITION. AND RECOLLECTION AT LEAST WAS
22 THERE WERE SOME REQUESTS FOR ADDITIONAL DOCUMENTS.
23 THOSE DOCUMENTS WERE THEN PRODUCED.

24 SO THIS STUFF WENT UP ON THE DISCOVERY
25 DATABASE. HE HAS THESE. IF THEY WERE -- AND THAT WAS,
26 AS MR. KUHS JUST POINTED OUT, OVER NINE MONTHS AGO.

27 **MR. KUHS:** IT DOESN'T CHANGE TWO FACTS, YOUR
28 HONOR. IT DOESN'T CHANGE THE FACT THAT THIS WITNESS DID

1 NOT PRODUCE THEM DURING HIS DEPOSITION. AND I'VE GOT AN
2 AGREEMENT WITH MR. LEININGER THIS WITNESS DIDN'T DO ANY
3 ADDITIONAL WORK SINCE HE WAS ORIGINALLY DEPOSED. THAT
4 MAKES THIS NEW EVIDENCE, AND I HAVEN'T SEEN IT.

5 **THE COURT:** ALL RIGHT. RULES ARE THE RULES. IF
6 THEY'RE NOT PRODUCED AT THE TIME OF THE DEPOSITION, THEY
7 CANNOT BE USED SUBSTANTIVELY TO UTILIZE THIS
8 WITNESS'S -- FOR THIS WITNESS'S TESTIMONY.

9 NOW, ONE OF THE THINGS THAT OCCURS TO ME IS
10 I'VE HEARD A LOT OF TESTIMONY ABOUT EDWARDS AIR FORCE
11 BASE. THERE DOESN'T SEEM TO BE A WHOLE LOT OF DISPUTE
12 ABOUT THE FACTS THAT GIVE RISE TO EITHER THE CREATION OR
13 THE OPERATION OR THE VARIOUS ADMINISTRATION ASPECTS OF
14 THE BASE.

15 AT SOME POINT, IT MAY WELL BE THAT THE
16 COURT SHOULD CONSIDER DOING A VIEW OF THE BASE. THESE
17 PHOTOGRAPHS WOULD BE ESSENTIALLY WHAT I WOULD SEE, I
18 ASSUME, IF I GET A VIEW OF THE BASE.

19 SO HOW DO WE UTILIZE TIME? IT WOULD BE
20 MUCH EASIER FOR ME TO LOOK AT PHOTOGRAPHS THAT HAVE BEEN
21 PROPERLY PREPARED AND WHICH HAVE BEEN GIVEN NOTICE OF
22 RATHER THAN MY TAKING THE TIME TO GO OUT TO EDWARDS AIR
23 FORCE BASE, WHICH I'M SURE WOULD BE VERY INTERESTING.

24 **MR. KUHS:** I'LL GIVE YOU THE -- I GUESS THE LARGER
25 PICTURE. THE OBJECTION, YOUR HONOR, IS NOT THAT I DON'T
26 MIND LOOKING AT THE PICTURES. I THINK THEY'RE KIND OF
27 NEAT. THEY WOULD HAVE BEEN HELPFUL IN MY EXAMINATION OF
28 THE WITNESS. THEY WEREN'T PRESENTED.

1 AND SO IF WHAT WE'RE TRYING TO DO IS
2 CONSERVE TIME, THEN WHAT WE OUGHT TO BE DOING IS TALKING
3 ABOUT THE WATER DEMANDS OF THE BASE AND NOT LOOKING AT
4 PICTURES. THAT'S WHERE I GO TO.

5 **THE COURT:** WELL, I THINK I TEND TO AGREE WITH
6 THAT, BUT I'M TRYING NOT TO LIMIT THE EXAMINATION OF
7 WITNESSES BY THE VARIOUS COUNSEL FOR THESE WITNESSES IN
8 THE INTEREST OF, QUOTE, "DUE PROCESS."YOU HAVE A RIGHT
9 TO KNOW WHAT THE WITNESS IS GOING TO TESTIFY TO BEFORE
10 THE WITNESS TESTIFIES.

11 I'M NOT SURE THAT THERE'S A WHOLE LOT OF
12 PREJUDICE TO YOU AT THIS POINT. IF YOU THINK THERE IS,
13 I'M CERTAINLY GOING TO GIVE YOU ANOTHER OPPORTUNITY TO
14 SPEND MORE TIME EXAMINING THE WITNESS AFTER YOU'VE HAD A
15 CHANCE TO LOOK AT THESE, AND I WOULD PREFER THAT RATHER
16 THAN STRIKING THEM AND HAVING TO FIND THE EVIDENCE IN
17 SOME OTHER FASHION.

18 **MR. KUHS:** I JUST --

19 **THE COURT:** I GUESS WHAT I'M SAYING TO YOU,
20 MR. KUHS, IS I DON'T THINK THE FACTS ARE VERY MUCH IN
21 DISPUTE HERE. THERE ARE SOME LEGAL QUESTIONS THAT ARE
22 GOING TO DETERMINE THE OUTCOME OF WHATEVER THE FEDERAL
23 RESERVE RIGHT MIGHT BE.

24 AND I WOULD ASK YOU, IF YOU COULD FIND IT
25 APPROPRIATE, TO ENTER INTO A STIPULATION CONCERNING THE
26 UTILIZATION OF THESE PHOTOGRAPHS TO EXEMPLIFY THE NATURE
27 OF THE BASE, AND I'LL GIVE YOU WHATEVER OTHER REMEDY OR
28 RELIEF THAT YOU THINK YOU'D LIKE TO HAVE IF YOU ASK FOR

1 IT.

2 **MR. KUHS:** HAVING HEARD YOUR HONOR'S WISHES, WHAT
3 I PROPOSE TO DO IS SIT QUIETLY AND LISTEN TO THE
4 TESTIMONY, WITHOUT OBJECTING TO THESE EXHIBITS AS BEING
5 NEW. IN THE BACK OF MY MIND I HAVE AN APPREHENSION, AND
6 THAT IS I DON'T KNOW WHAT'S COMING NEXT BECAUSE I'M
7 HEARING WHAT THESE ARE FOR THE FIRST TIME.

8 **THE COURT:** WELL, DON'T HESITATE TO STAND UP AND
9 OBJECT.

10 **MR. KUHS:** WELL, I'M TRYING TO BE EFFICIENT AND
11 WITHOUT -- YOU KNOW, WITHOUT INTERRUPTING THE WITNESS
12 AND WITHOUT INTERRUPTING MR. LEININGER, BUT ADD SOME
13 FAIRNESS TO THE PROCESS.

14 SO MAYBE LET'S -- TO GET ON WITH IT, WHY
15 DON'T WE HAVE THE WITNESS TESTIFY TO THESE. IF I
16 IDENTIFY SOME PREJUDICE AT THE END, I'LL BRING IT TO THE
17 ATTENTION OF THE COURT AND WE CAN DEAL WITH IT AT THAT
18 POINT.

19 **THE COURT:** CERTAINLY, AND I CERTAINLY WILL
20 ENTERTAIN A MOTION TO STRIKE AS WELL.

21 **MR. KUHS:** THANK YOU, YOUR HONOR.

22 **THE COURT:** ALL RIGHT. THANK YOU.

23 (INDICATING.)

24 **MR. LEININGER:** YOUR HONOR, IF I MAY COMMENT.

25 **THE COURT:** IT'S REALLY NOT NECESSARY. I'D JUST
26 LIKE TO GET MOVING HERE WITH THE TESTIMONY.

27 **MR. LEININGER:** OKAY. WELL, I THINK WE COULD
28 ACTUALLY SKIP THESE PHOTOS AND JUST GO RIGHT TO WATER

1 USE. SHALL WE?

2 **THE COURT:** AS YOU WISH.

3 **BY MR. LEININGER:**

4 **Q** MR. JUDKINS, CAN YOU SUMMARIZE HOW WATER IS
5 USED AT EDWARDS AIR FORCE BASE?

6 **A** STARTING WITH THE PIPELINE, WATER IS USED
7 TO SUPPORT THE TEST MISSION. THE GENERAL MENTIONED
8 EARLIER THE BRAKE TESTING THAT WE DID FOR THE B-52, BUT
9 WE ALSO DO WET BRAKE TESTING, WHERE MY CRAFTSMAN AND
10 FIREFIGHTERS SPRAY WATER ALL OVER THE RUNWAY, AND THEN,
11 OF COURSE, THE TESTERS JAM THE BRAKES ON TO SEE HOW THE
12 AIRPLANE DOES ON A WET RUNWAY.

13 WE PROVIDE WATER FOR THE INDUSTRIAL
14 FUNCTIONS AND THE MAINTENANCE FACILITIES ON THE
15 INSTALLATION. WE PROVIDE WATER FOR FIRE SUPPRESSION.
16 WE HAVE AN EXTENSIVE DELUGE SYSTEM THROUGHOUT THE FLIGHT
17 LINE TO PROTECT THE HANGARS AND THE AIRCRAFT FROM
18 CATASTROPHIC FIRES.

19 IT'S USED FOR DOMESTIC WATER USE, OBVIOUS
20 REASONS. IT'S USED IN BASE HOUSING, AGAIN, FOR
21 DOMESTIC. IT'S USED FOR IRRIGATION PURPOSES PRETTY MUCH
22 LIKE IT WOULD BE USED IN A SMALL, SMALL CITY, EXCEPT FOR
23 THE FACT THAT WE DO HAVE A PLOT LINE AND WE DO USE IT TO
24 SUPPORT TESTING.

25 IT'S ALSO USED WHEN THE AIR FORCE RESEARCH
26 LAB IS TESTING THEIR LARGE ROCKET MOTORS. IT'S ALSO
27 USED TO SUPPORT THOSE -- THE PROPULSION TEST.
28 DR. HALLION REFERRED TO THE WATER CONSUMPTION SUPPORTING

1 THE TEST, BUT IT IS TRUE. AND WE HAVE A 3 MILLION
2 GALLON STORAGE TANK TO SUPPORT A COUPLE OF THE TEST
3 STANDS WHEN THEY'RE OPERATIONAL.

4 Q LET'S EXPLORE IN A LITTLE BIT MORE DETAIL
5 WHAT YOU CALL "DOMESTIC USE." DO YOU HAVE FACILITIES ON
6 THERE THAT DO NOT INVOLVE HOUSING, YET THE WATER IS USED
7 FOR WHAT YOU WOULD CALL "DOMESTIC USE"? FOR EXAMPLE --

8 A YES, SIR. FOR EXAMPLE, MY OFFICE BUILDING.

9 Q SO OFFICE BUILDINGS?

10 A COOKING, OFFICE BUILDINGS, THE TEST
11 FACILITIES, THE HANGARS.

12 Q AND DO YOU HAVE A COMMISSARY?

13 A YES, SIR, WE DO. WE HAVE A COMMISSARY. WE
14 HAVE BASE EXCHANGE, WHICH IS THE EQUIVALENT OF A
15 SHOPPING -- DEPARTMENT STORE. WE HAVE FRANCHISES,
16 FRANCHISES WITH -- PRIMARILY WITH AAFES, THE ARMY AND
17 AIR FORCE EXCHANGE SERVICE, WITH BURGER KING, I BELIEVE
18 WITH STARBUCKS. PANDA EXPRESS INSTALLED ON THE
19 INSTALLATION, AND I BELIEVE SUBWAY AS WELL.

20 Q SO LIKE A SMALL CITY?

21 A YES, SIR.

22 Q WHERE DOES YOUR WATER COME FROM?

23 A WE RECEIVE OUR WATER FROM UP -- TWO
24 SOURCES. OF COURSE, GROUND WATER, WHICH WE PUMP FROM
25 OUR WELLS, AND THEN WE ALSO PURCHASE WATER FROM AVEK,
26 ANTELOPE VALLEY EAST KERN -- ANTELOPE VALLEY EAST KERN
27 WATER AGENCY.

28 Q AND FOR THE PUMPED WATER, ARE THESE WELLS

1 METERED?

2 **A** YES, SIR, THEY ARE.

3 **Q** INCLUDING THE HOUSING?

4 **A** HOUSING IS NOT METERED DIRECTLY, BUT WE
5 HAVE A METER THAT ALLOWS US TO DETERMINE HOW MUCH WATER
6 GOES TO HOUSING.

7 **Q** AND HAVE YOU CALIBRATED THE WELL METERS?

8 **A** SIR, I'M NOT AWARE OF THE LAST TIME WE
9 CALIBRATED THE WELLS. THERE IS A REQUIREMENT THAT WE,
10 UNDER OUR PREVENTATIVE MAINTENANCE PROGRAM, DO CALIBRATE
11 THEM.

12 BUT I CAN TELL YOU WITHIN THE LAST COUPLE
13 OF YEARS THAT SOUTHERN CALIFORNIA EDISON HAS WORKED WITH
14 US AS A PARTNERSHIP TO LOOK FOR WAYS TO DRIVE DOWN OUR
15 ELECTRICAL ASSUMPTION, AND THEY HAVE ACTUALLY METERED
16 OUR WELLS TO TEST THE ELECTRICAL CONSUMPTION, AND THEIR
17 METER READINGS AGREE FAVORABLY WITH OURS.

18 **Q** LET'S TURN BACK TO THE AVEK STATE PROJECT
19 WATER. WHY DOES EDWARDS AIR FORCE BASE USE STATE
20 PROJECT WATER?

21 **A** WE ARE A MILITARY ORGANIZATION; SO WE NEED
22 TO BE ABLE TO FUNCTION DURING ALL TIMES. SO I NEED TO
23 HAVE A REDUNDANCY IN SUPPLY. SO I CAN PUMP FROM THE
24 GROUND AND I CAN ALSO BUY WATER FROM AVEK, WHICH GIVES
25 ME A MUCH HIGHER PROBABILITY THAT I'LL NEVER BE WITHOUT
26 WATER ON THE INSTALLATION TO SUPPORT THE MISSION.

27 WE COULD LOSE THE AQUEDUCT TO AN EARTHQUAKE
28 OR SOME OTHER CATASTROPHE AND WITH THAT WE'D PUMP FROM

1 THE GROUND, OR IF SOMETHING WENT WRONG WITH MY WELLS OR
2 MY WATER SUPPLY, MY GROUND WATER SUPPLY, I COULD
3 CONTINUE TO BUY AVEK WATER.

4 AND I'M ALSO USING THE TWO SOURCES OF WATER
5 TO MEET WHAT I WOULD CALL WATER QUALITY REGULATIONS.
6 THE M.C.L., THE MAXIMUM CONTAMINATION LEVEL, FOR ARSENIC
7 IN DRINKING WATER WAS FAIRLY RECENTLY, I BELIEVE AROUND
8 '06, '07, REDUCED FROM 50 PARTS PER BILLION TO 10 PARTS
9 PER BILLION, A SIGNIFICANT DROP.

10 THERE ARE TWO WAYS TO HANDLE THAT. YOU CAN
11 FILTER IT OR YOU CAN MIX ARSENIC THAT IS -- THAT
12 CONTAINS -- OR, I'M SORRY. YOU CAN MIX WATER THAT
13 CONTAINS ARSENIC WITH ARSENIC-FREE WATER AND ACHIEVE THE
14 M.C.L. IN A MUCH MORE EFFICIENT WAY. SO THAT'S WHAT
15 WE'RE DOING, IS WE'RE MIXING. THE COST AVOIDANCE IN
16 JUST FILTERS ALONE IS \$600,000 A YEAR.

17 Q OF THE WATER THAT IS PUMPED OR IMPORTED
18 ONTO EDWARDS AIR FORCE BASE, HOW MUCH OF THAT IS
19 CONSUMED?

20 A ALL OF IT.

21 MR. KUHS: OBJECTION. VAGUE AS TO TIME.

22 BY MR. LEININGER:

23 Q NOW, THIS YEAR HOW MUCH OF THAT IS
24 CONSUMED?

25 A ALL OF IT, NEAR -- YEARLY. YES.

26 Q HOW MUCH DO YOU KNOW -- WELL, YOU'RE NOT A
27 HYDROGEOLOGIST.

28 STRIKE THAT QUESTION, YOUR HONOR.

1 **MR. ZIMMER:** IT'S ALSO VAGUE AS TO "CONSUME."

2 **BY MR. LEININGER:**

3 **Q** DO YOU HAVE ANY KNOWLEDGE OF HOW MUCH WATER
4 RETURNS TO THE AQUIFER THROUGH WHAT YOU MAY HAVE HEARD,
5 TESTIMONY TELLING RETURN FLOWS?

6 **MR. KUHS:** OBJECTION, HEARSAY.

7 **THE COURT:** OBJECTION WHAT?

8 **MR. KUHS:** HEARSAY.

9 **THE COURT:** SUSTAINED.

10 **MR. LEININGER:** OKAY.

11 **BY MR. LEININGER:**

12 **Q** LET'S APPROACH THIS A DIFFERENT WAY. WHAT
13 ABOUT LOSSES TO YOUR WATER SYSTEM THROUGH THE WATER
14 PIPING AND SEWAGE SYSTEM?

15 **A** AS PART OF MY WATER -- WELL, MY UTILITY
16 CONSERVATION PROGRAM, THE WATER PORTION, I INVESTED
17 SIGNIFICANTLY IN UPGRADING OUR WATER DISTRIBUTION SYSTEM
18 THROUGHOUT THE INSTALLATION TO BASE -- TO GET RID OF THE
19 LEAKY PIPES; SO AT THIS POINT WE BELIEVE -- I BELIEVE WE
20 HAVE VERY LITTLE LOSS.

21 **Q** WHAT ABOUT LANDSCAPING?

22 **A** LANDSCAPING. EDWARDS AIR FORCE BASE, WHEN
23 I ARRIVED IN JUNE OF 1998, WAS A VIRTUAL OASIS IN THE
24 DESERT. WE HAD SOD, WE HAD -- WELL, WE HAD GRASS ALL
25 OVER THE INSTALLATION.

26 WE'VE -- UNDER MY TENURE AT THE
27 INSTALLATION, WE'VE IMPLEMENTED AN AGGRESSIVE
28 ZEROSCAPING, DESERT LANDSCAPING PROGRAM, TO MINIMIZE --

1 TO IMPROVE QUALITY OF LIFE, NUMBER 1, BUT ALSO TO DRIVE
2 DOWN OUR WATER CONSUMPTION AND TO BE GOOD NEIGHBORS.

3 I'M WORRIED ABOUT -- FROM A SECURITY POINT
4 OF VIEW, I'M WORRIED ABOUT HAVING A REDUNDANCY. I ALSO
5 NEED TO BE A GOOD NEIGHBOR IN THE ANTELOPE VALLEY. AND
6 SO OVER THE LAST SEVERAL YEARS WE'VE BEEN DESERT
7 LANDSCAPING THROUGHOUT THE INSTALLATION.

8 Q I THINK WE ALSO HEARD MR. KUHS ASK A
9 QUESTION REGARDING CONSERVATION MEASURES BASED UPON A
10 PRESIDENTIAL EXECUTIVE ORDER.

11 A YES, SIR. THE PRESIDENT HAS ISSUED TWO
12 EXECUTIVE ORDERS. I DON'T REMEMBER THE EXACT NUMBERS.
13 ONE WAS EXECUTIVE ORDER 5 -- I THINK IT WAS 416, AND
14 THEN ANOTHER ONE WAS 413. BUT BASICALLY THEY WERE
15 DIRECTIONS TO THE FEDERAL GOVERNMENT SPECIFICALLY --
16 WELL, INCLUDING THE DEPARTMENT OF DEFENSE AND THE AIR
17 FORCE -- TO REDUCE ALL UTILITY CONSUMPTION.

18 THE WATER WAS BASICALLY, OVER TIME, AT
19 2 PERCENT PRODUCTION, ANNUAL REDUCTION OF 2 PERCENT TO I
20 THINK A TOTAL OF 26 PERCENT OVER AN F.Y.07 BASELINE.
21 AND WE DID PURSUE THAT -- THAT GOAL AND HAVE MET IT
22 ALREADY THROUGH JUDICIOUS LANDSCAPING. AND, OF COURSE,
23 WE HAD ALREADY IMPROVED OUR DISTRIBUTION SYSTEM.

24 Q OKAY. SO YOU MET THE PRESIDENT'S GOAL --
25 MANDATE?

26 A YES, SIR, WE'VE ALREADY MET THE MANDATE.

27 Q SO YOU FEEL CONFIDENT THAT EDWARDS AIR
28 FORCE BASE IS A GOOD WATER STEWARD, WITH GOOD

1 CONSERVATION MEASURES?

2 A ABSOLUTELY.

3 Q LET'S INTRODUCE EXHIBIT 178, PLEASE.

4 DO YOU KNOW WHAT THIS EXHIBIT IS?

5 A MAY I LOOK AT IT FOR JUST A QUICK MOMENT?

6 Q YES. I'M SORRY. YES, PLEASE.

7 HAVE YOU SEEN THIS EXHIBIT BEFORE? THIS IS
8 EXHIBIT 178, AND I BELIEVE IT'S BATES LABELED...

9

10 (INDISCERNIBLE: SPEAKING SIMULTANEOUSLY.)

11

12 THE WITNESS: YES, I HAVE SEEN IT BEFORE. YES.
13 YES, SIR.

14 BY MR. LEININGER:

15 Q WHAT IS THIS A TABLE OF?

16 A IT'S A TABLE OF THE WATER PRODUCTION AT
17 EDWARDS AIR FORCE BASE, STARTING WITH THE YEAR 1947 AND
18 GOING UP THROUGH YEAR 2012.

19

20 (EXHIBIT 178, IDENTIFIED: WATER
21 PRODUCTION TABLE, 1947-2012.)

22

23 BY MR. LEININGER:

24 Q WAS THIS COMPILED BY YOU OR AT YOUR
25 DIRECTION?

26 A NO, SIR, IT WAS NOT. I OFTENTIMES ASK
27 FOR -- NOT THIS PARTICULAR CHART. I HAVE ASKED FOR THIS
28 DATA IN THE PAST AND HAVE SEEN IT IN OTHER CHARTS, AND I

1 DON'T RECALL SEEING IT IN THIS PARTICULAR ONE. BUT IN
2 JUST GLANCING AT THE NUMBERS, THEY'RE ACCURATE.

3 Q WHAT'S THE SOURCE OF THESE NUMBERS, SOURCE
4 OF THE INFORMATION, PLEASE?

5 A OKAY. WELL, THROUGH 1996, IT WAS FROM THE
6 DR. NISHIKAWA, U.S.G.S. REPORT. I BELIEVE IT WAS
7 PUBLISHED IN 2001. AND THEN THEREAFTER IT WAS FROM THE
8 CIVIL ENGINEERING RECORDS.

9 Q SO COULD WE HAVE AN ENLARGEMENT OF THE
10 PERIOD OF THE MID 1960S?

11 SO FROM THE NISHIKAWA REPORT, DO YOU SEE
12 MAXIMUM WATER USE ON THIS TABLE, FIGURES, AND CAN YOU
13 READ THE YEARS' MAXIMUM WATER USAGE? SORRY. ON THIS
14 EXCERPT OF THE PAPER.

15 A YES, SIR. OF COURSE, IT'S IN THE CENTER,
16 THE YEARS '64 AND '65 TIME FRAME. IN 1964, 7,200
17 ACRE-FEET FOR THAT YEAR, AND IN 1965 IT WAS 7,500
18 ACRE-FEET.

19 MR. LEININGER: CAN WE NOW GO TO THE YEARS 2000,
20 2001? JUST 2000 AND 2001. FEW YEARS RIGHT IN THERE. I
21 THINK IF YOU COULD JUST ENLARGE IT.

22

23 (PAUSE IN THE PROCEEDINGS.)

24

25 MR. LEININGER: THERE WE GO.

26 BY MR. LEININGER:

27 Q SO FOR THE YEARS 2000 AND 2001, CAN YOU
28 RECITE THOSE FIGURES ALSO?

1 **A** YES, SIR. FOR 2000, THE MONTHLY FIGURE,
2 THE CONSUMPTION WAS 6,750 ACRE-FEET, AND FOR 2001 THE
3 CONSUMPTION WAS 6,660 ACRE-FEET.

4 **Q** AND THEN IF WE CAN GO BACK TO THE ENTIRE
5 ROW FOR THESE YEARS. THERE ARE VALUES HERE THAT DIDN'T
6 APPEAR IN THE 1960S.

7 SORRY. WE'LL HAVE TO SHOW THE TOP OF THE
8 COLUMN.

9 SO THAT FIGURE IS DERIVED FROM VARIOUS
10 SOURCES THAT WERE NOT PRESENT IN MID 1960S. CAN YOU
11 JUST READ WHAT THOSE ARE?

12 **MR. KUHS:** OBJECTION, QUESTION IS VAGUE.

13 **BY MR. LEININGER:**

14 **Q** IF YOU COULD READ THE TOPS OF THE COLUMNS
15 TO THE RIGHT OF THAT CHART, PLEASE.

16 **A** OKAY. MAIN BASE WELLS, AVEK MAIN BASE,
17 A.F.R., ET AL., WELLS, AND AVEK A.F.R., ET AL.

18 **Q** HOW MANY WELLS ARE THERE?

19 **A** SIR, I HAVEN'T MEMORIZED THE NUMBER, BUT 14
20 OR 15 WELLS.

21 **Q** AND LET'S GO BACK TO THIS CHART. FROM YOUR
22 KNOWLEDGE OF THIS WATER USE PERIOD, DO YOU KNOW
23 APPROXIMATELY THE REASON FOR THE MAXIMUM WATER USE IN
24 THE 1960S?

25 **MR. KUHS:** OBJECTION. EXCUSE ME A MINUTE, YOUR
26 HONOR. THIS WITNESS TESTIFIED IN DEPOSITION THAT HE WAS
27 NOT GOING TO OPINE TO WATER USE PRIOR TO 1997.

28 **THE COURT:** THAT HE WAS NOT WHAT?

1 **MR. KUHS:** THIS WITNESS WAS NOT GOING TO TALK
2 ABOUT WATER USE PRIOR TO 1997.

3 **MR. LEININGER:** WELL, IT'S ALREADY IN THE RECORD,
4 YOUR HONOR.

5 **Q** LET'S GO ON TO 2000.

6 **THE COURT:** THE OBJECTION IS SUSTAINED.

7 **BY MR. LEININGER:**

8 **Q** 2000, 2001. WHAT WAS THE REASON FOR THE
9 HIGH WATER USE IN 2000, 2001?

10 **A** IN THAT TIME FRAME, WE HAD A VERY ROBUST
11 HOUSING REPLACEMENT PROGRAM AND HOUSING DEMOLITION
12 PROGRAM AS WELL; SO WE WERE DEMOLISHING HUNDREDS OF
13 HOUSES DURING THAT TIME FRAME. THE HOUSES HAD ASBESTOS,
14 AND WE ALSO HAD AN AGGRESSIVE DUST CONTROL PROGRAM; SO
15 THE DEMOLITION PORTION OF THE HOUSING PROGRAM CONSUMED A
16 GREAT DEAL OF WATER.

17 **Q** SO LET'S EXPAND THIS CHART AGAIN, PLEASE,
18 TO SHOW THE PERIOD OF YEARS FROM 2000 TO PRESENT.

19 HOW WOULD YOU DESCRIBE -- SUMMARIZE --
20 LET'S JUST GO RIGHT TO THE VOLUME. WHAT'S THE VOLUME IN
21 2011, 2012?

22 **A** 2011, 2,584 ACRE-FEET. 2012, 2,814.

23 **Q** OKAY. SO HOW ARE YOU GOING TO SUMMARIZE
24 HISTORICAL WATER PRODUCTION AT EDWARDS AIR FORCE BASE?

25 **A** HISTORICAL WATER PRODUCTION OVER THE LAST
26 SEVERAL YEARS HAS BEEN DRIVEN DOWN THROUGH AN ASTUTE
27 LANDSCAPING PROGRAM.

28 **Q** AND HISTORICALLY WATER PRODUCTION --

1 COMPARING WHAT YOU STATED FOR THE REASONS FOR THE HIGH
2 WATER USE IN 2000, HISTORICAL WATER USE THAT WE'VE HEARD
3 PREVIOUSLY -- AND I THINK YOU ARE FAMILIAR WITH ALTHOUGH
4 WON'T TESTIFY TO -- HOW WOULD YOU DESCRIBE THE
5 HISTORICAL PATTERN OF WATER CONSUMPTION AT EDWARDS AIR
6 FORCE BASE?

7 **A** SIR, IN MY OPINION, IT'S QUITE VARIABLE,
8 DEPENDING, OF COURSE, ON THE ASSIGNED MISSION AT THE
9 TIME OF THE ROCKETS, THE ASSIGNED MISSION AT THE TIME,
10 AND, OF COURSE, THE WEATHER HAS A GREAT DEAL TO DO WITH
11 IT AS WELL. BUT IT'S VARIABLE.

12 **Q** SO LET'S FINISH WITH YOUR FUTURE WATER USE
13 AT EDWARDS AIR FORCE BASE. HOW DID YOU ESTIMATE WATER
14 USE CALCULATED BY MISSION DEMAND? LET'S TALK ABOUT HOW
15 YOU CALCULATE FUTURE WATER NEEDS FOR EDWARDS AIR FORCE
16 BASE.

17 **A** YES, SIR. WELL, I WOULD TAKE MORE OF A
18 CAPACITY POINT OF VIEW. WHAT WAS THE CAPACITY OF THE
19 INSTALLATION TO ACCEPT NEW MISSIONS? I WASN'T MAKING A
20 PROGNOSIS ON WHETHER NEW MISSIONS WOULD COME ONE WAY OR
21 THE OTHER, JUST WHAT WOULD BE THE INSTALLATION'S
22 CAPACITY OR CAPABILITY.

23 I VETTED THAT WITH MY LEADERSHIP, MY
24 INSTALLATION COMMANDER AT THE TIME, WHO WAS COLONEL
25 GANDY, WHO VETTED IT WITH THE CENTER COMMANDER AT THE
26 TIME, AND THAT WAS MAJOR GENERAL EICHHORN.

27 AND THE ASSUMPTION WAS THAT THE
28 INSTALLATION COULD ACCEPT AN ADDITIONAL -- THE

1 EQUIVALENT OF AN ADDITIONAL FIGHTER WING. WE TYPICALLY
2 SAY A 72 P.A.A., PRIMARY ASSIGNED AIRCRAFT, FIGHTER
3 WING. IT MIGHT BE 810S, IT MIGHT BE F-16S, IT MIGHT BE
4 F-15S, IT MIGHT BE F-16S. AND SO WE THEN USE THAT
5 ASSUMPTION --

6 **MR. KUHS:** YOUR HONOR, I'M GOING TO OBJECT TO ANY
7 OPINION BASED UPON FUTURE WATER DEMANDS AS SPECULATIVE
8 AND LACKS FOUNDATION. THERE'S BEEN NO TESTIMONY THAT
9 EDWARDS AIR FORCE BASE IS GOING TO GET AN ADDITIONAL
10 FIGHTER WING, AND SO BASING FUTURE ADVANTAGE ON A
11 FIGHTER WING WHICH HAS NOT BEEN ESTABLISHED IS IMPROPER.

12 **THE COURT:** OKAY. I'M GOING TO OVERRULE THE
13 OBJECTION. HE MAY TESTIFY AS TO WHAT THE BASE
14 THEORETICALLY COULD HANDLE BY WAY OF ADDITIONAL -- AN
15 ADDITIONAL WING OR ITS EQUIVALENT. NOT SUGGESTING THAT
16 THAT'S GOING TO HAPPEN, BUT IT MAY BE USEFUL TO KNOW.

17 GO AHEAD, BUT PLEASE KEEP YOUR VOICE UP.

18 **THE WITNESS:** YES, YOUR HONOR.

19 **BY MR. LEININGER:**

20 **Q** MR. JUDKINS, YOU JUST TESTIFIED THAT WATER
21 USE AT EDWARDS AIR FORCE BASE IS DYNAMIC AND HIGHLY
22 VARIABLE; IS THAT CORRECT?

23 **A** YES, SIR.

24 **Q** OKAY. SO YOU HAVE JUST TESTIFIED THAT THE
25 PROJECTIONS FOR FUTURE WATER DEMANDS, YOU'RE LOOKING AT
26 MISSION NEEDS AND REASONABLE MISSION NEEDS IN THE
27 FUTURE; IS THAT CORRECT?

28 **A** YES, SIR.

1 **Q** AND WHAT IS THAT FIGURE BASED ON, BEFORE WE
2 START TO DISCUSS ADDITIONAL MISSION IN THE EQUIVALENCY
3 OF A FIGHTER WING?

4 SO YOUR ESTIMATE FOR FUTURE WATER NEEDS AT
5 EDWARDS AIR FORCE BASE, DUE TO THIS VARIABLE DYNAMIC
6 NEEDS AT EDWARDS AIR FORCE BASE, YOUR ESTIMATE I BELIEVE
7 WAS 4,500 ACRE-FEET PER YEAR. WHAT IS THAT BASED UPON?

8 **A** SIR, THAT WAS BASED UPON THE FORECASTED
9 WATER REQUIREMENTS FOR A MISSION EQUIVALENT OF F. -- OR
10 72 P.A.A. FIGHTER WING.

11 **Q** LET'S TALK ABOUT THAT FUTURE POTENTIAL.
12 HOW DID YOU ARRIVE AT YOUR ESTIMATE FOR THE WATER NEEDS
13 FOR A 72 P.A.A.?

14 WHAT DOES "P.A.A." STAND FOR?

15 **A** PRIMARY ASSIGNED AIRCRAFT.

16 **Q** FIGHTER WING OR ITS EQUIVALENCY?

17 **A** YES, SIR.

18 **Q** HOW DID YOU ARRIVE AT THAT ESTIMATE?

19 **A** WELL, I TASKED JOE DIORIO TO --

20 **Q** AND WHO IS JOE DIORIO?

21 **A** I'M SORRY. I'M SORRY. JOE DIORIO IS A
22 MECHANICAL ENGINEER, WHO'S SINCE RETIRED, BUT HE WAS
23 WORKING IN OUR WATER PROGRAM.

24 I ASKED JOE DIORIO TO ESTIMATE THE WATER
25 CONSUMPTION OF A 72 P.A.A. FIGHTER WING AT EDWARDS AIR
26 FORCE BASE, UNDER THE ASSUMPTION THAT IT WOULD BE
27 STATIONED IN OUR MAIN BASE AREA. JOE PRODUCED A
28 CHART -- WELL, HE PRODUCED A SPREADSHEET WITH HIS

1 ASSUMPTIONS, WHICH I THEN USED TO PUT TOGETHER OUR
2 PROPOSAL FOR THE OVERALL FUTURE -- WELL, NOT FUTURE, BUT
3 THE OVERALL POTENTIAL NEED FOR WATER.

4 **MR. LEININGER:** OKAY. AND CAN WE GO TO
5 EXHIBIT 187, PLEASE?

6 **MR. ZIMMER:** YOUR HONOR --

7 **THE COURT:** BEFORE WE DO THAT, MR. LEININGER, I
8 INDICATED THAT WE PROBABLY WOULDN'T TAKE A BREAK, BUT I
9 NOTICE IT WOULD BE TWO AND A HALF HOURS AND I THINK WE
10 NEED TO TAKE A BREAK. SO LET'S TAKE ABOUT A
11 SEVEN-MINUTE BREAK HERE. STAND UP AND GET A DRINK OF
12 WATER, WHATEVER YOU NEED TO DO.

13 AND WE WILL RESUME AND I'LL TAKE UP YOUR
14 OBJECTIONS WHEN WE GET BACK.

15 **MR. ZIMMER:** THANK YOU, YOUR HONOR.

16

17 (RECESS.)

18

19 **THE COURT:** ALL RIGHT. I THINK WE CAN GET
20 STARTED. I'M GOING TO TAKE UP THE OBJECTIONS.

21 ALL RIGHT. MR. KUHS, YOU HAD AN OBJECTION.

22 **MR. KUHS:** I'M GOING TO LET MR. ZIMMER GO FIRST IF
23 THAT'S ALL RIGHT WITH YOUR HONOR.

24 **THE COURT:** THAT'S FINE WITH ME.

25 **MR. ZIMMER:** YOUR HONOR, MY OBJECTION IS BASED ON
26 THE FACT THAT THIS WE'RE DEALING WITH RIGHT HERE, FIRST
27 OF ALL, I THINK IT ASSUMES FACTS BECAUSE I THINK THIS
28 4500 NUMBER CAME OUT OF MR. LEININGER'S MOUTH, NOT OUT

1 OF THE WITNESS'S MOUTH. I DON'T THINK THERE WAS A BASIS
2 FOR EXACTLY WHAT THAT NUMBER WAS.

3 BUT THE WITNESS SAID THAT HE REQUESTED THAT
4 ANOTHER PERSON, MR. DIORIO, TO DO AN ESTIMATE ON THE
5 PROJECTED WATER USE FOR THIS FUTURE FIGHTER PLANE. THIS
6 IS A CLASSIC COLEMAN AND CONTINENTAL AIRLINE SITUATION,
7 WHERE IT IS THE EXPERT OPINION OF SOMEONE ELSE WHO DID
8 THE ESTIMATE AND THE OPINION WHO'S NOT BEFORE THE COURT
9 AND HAS NOT TESTIFIED AND ALL THIS WITNESS DID WAS PUT
10 IT INTO A SPREADSHEET. SO I THINK IT'S IMPROPER FOR
11 THAT EVIDENCE TO COME IN.

12 **THE COURT:** I THINK IN THE FORM THAT YOU'VE MADE
13 YOUR OBJECTION, YOUR OBJECTION IS WELL-TAKEN, BUT I
14 THINK THAT A FOUNDATION COULD BE LAID. LET'S HEAR IT.

15 SO I'LL SUSTAIN THE OBJECTION.
16 MR. LEININGER, SO YOU CAN LAY FOUNDATION.

17 **MR. LEININGER:** SURE, YOUR HONOR.

18 LET'S CALL UP EXHIBIT 187.

19 **BY MR. LEININGER:**

20 **Q** WHAT IS THIS EXHIBIT, MR. JUDKINS?

21 **A** THIS IS THE SPREADSHEET THAT MR. JOE DIORIO
22 PRODUCED FOR US.

23
24 (EXHIBIT NUMBER 187, IDENTIFIED:
25 SPREADSHEET PRODUCED BY MR. JOE
26 DIORIO.)
27
28

1 **BY MR. LEININGER:**

2 Q OKAY. AND --

3 A HE IS -- REPRESENTS THAT HIS -- THE
4 CALCULATIONS AND THE ESTIMATED WATER CONSUMPTION OF A
5 72 P.A.A. FIGHTER WING AT EDWARDS AIR FORCE BASE.

6 Q AND DID YOU VALIDATE THIS STATEMENT IN SOME
7 MANNER?

8 **MR. ZIMMER:** THAT'S VAGUE.

9 **THE WITNESS:** YES, SIR. I REVIEWED IT WITH
10 MR. DIORIO AND MR. CLARENCE SANDERS, WHO WORKS AND IS IN
11 CHARGE OF MY WATER SHOP, AND THEN COMPARED IT TO THE
12 DATA I HAD AVAILABLE TO ME IN TERMS OF -- I HAD
13 EXPERIENCE AT DAVIS-MONTHAN AIR FORCE BASE AS THE DEPUTY
14 SUPPORT GROUP COMMANDER. AND I CALLED TO MY CONTACTS
15 THERE AT DAVIS-MONTHAN IN ARIZONA, ANOTHER DESERT
16 CLIMATE, AND THE NUMBERS COMPARED FAVORABLY WITH WHAT
17 JOE HAD CALCULATED, SO.

18 **BY MR. LEININGER:**

19 Q AND WHY DID YOU --

20 **MR. ZIMMER:** HOLD ON A SECOND.

21 OBJECTION ALSO TO THE HEARSAY AMONG THE
22 PEOPLE AT OTHER AIR FORCE BASES, ALTHOUGH --

23 **THE COURT:** WELL, HE HASN'T TOLD US WHAT THEY
24 SAID. HE JUST TOLD US THAT HE TALKED TO THEM.

25 **MR. ZIMMER:** I THOUGHT HE SAID A LITTLE MORE THAN
26 THAT.

27 **BY MR. LEININGER:**

28 Q WHY DID YOU CHOOSE DAVIS-MONTHAN, AGAIN?

1 **A** DAVIS-MONTHAN, OF COURSE, IS A FIGHTER
2 BASE. IT'S IN A DESERT CLIMATE, IN A HIGH DESERT
3 CLIMATE MUCH LIKE WE ARE -- OR MUCH LIKE EDWARDS AIR
4 FORCE BASE.

5 **Q** OKAY. SO YOU'RE TRYING TO DRAW AN ANALOGY
6 BETWEEN WATER USE IN A DESERT ENVIRONMENT IN ARIZONA TO
7 A DESERT ENVIRONMENT HERE AT EDWARDS AIR FORCE BASE?

8 **A** YES, SIR.

9 **Q** CAN YOU CONTINUE AS TO WHAT YOU ASKED FROM
10 MR. DIORIO?

11 **A** WELL, YOU NEED MORE DETAIL ON THE
12 SPREADSHEET?

13 **Q** SURE.

14 **A** BECAUSE THAT'S -- THAT'S -- THIS IS ALL
15 I'VE ASKED -- THIS IS ALL I ASKED OF MR. DIORIO. I THEN
16 WENT ON TO EVALUATE OUR OWN CONSUMPTION.

17 **Q** LET'S STAY WITH THE SPREADSHEET RIGHT NOW.
18 SO --

19 **MR. KUHS:** YOUR HONOR, I'M NOT SURE IT'S PROPER TO
20 ASK THIS WITNESS ABOUT THE SPREADSHEET PREPARED BY
21 SOMEBODY NOT HERE BEFORE US. HE SAID HE'S ADOPTED THE
22 OPINION. THE SPREADSHEET ITSELF SHOULDN'T GO INTO
23 EVIDENCE.

24 **MR. LEININGER:** YOUR HONOR, THE WITNESS CAN --

25 **THE COURT:** JUST A MINUTE.

26 **MR. ZIMMER:** IF THE WITNESS HAS TESTIFIED THAT'S
27 ALL HE DID WITH REGARD TO THE SPREADSHEET, IF THAT'S THE
28 CASE, I HAVE SOME COMMENTS.

1 **THE COURT:** WELL, I DON'T THINK THAT'S ALL HE DID.
2 I DON'T THINK WE'RE HEARING WHAT HIS EVALUATION AND
3 ANALYSIS WAS. I'D LIKE TO HEAR THE REST OF IT.

4 **MR. ZIMMER:** THIS TO ME IS FOUNDATIONAL, WHAT
5 WE'RE DOING RIGHT NOW.

6 **THE COURT:** THAT'S CORRECT.

7 **MR. ZIMMER:** IF THERE'S ANYTHING ELSE HE DID WITH
8 REGARD TO THE SHEET, I'LL RESERVE MY COMMENTS TILL AFTER
9 THAT, BUT I'D LIKE TO BE HEARD.

10 **THE COURT:** OKAY.

11 **BY MR. LEININGER:**

12 **Q** OKAY. MR. JUDKINS, LET'S TALK ABOUT THE
13 CONSTRUCTION OF THIS SPREADSHEET. YOU JUST TESTIFIED
14 YOU DID NOT CREATE THIS SPREADSHEET; IS THAT CORRECT?

15 **A** THAT IS CORRECT.

16 **Q** SO YOU TESTIFIED THAT MR. DIORIO CREATED
17 THIS SPREADSHEET; IS THAT CORRECT?

18 **A** YES, SIR, I DID.

19 **Q** AND WHAT CONVERSATIONS DID YOU HAVE WITH
20 MR. DIORIO TO ESTABLISH THE AUTHENTICITY OF THESE
21 NUMBERS AND VALIDATE THE DATA?

22 **MR. ZIMMER:** CALLS FOR HEARSAY.

23 **THE COURT:** SUSTAINED.

24 **BY MR. LEININGER:**

25 **Q** HOW DO YOU RELY UPON -- WHAT DO YOU DO TO
26 RELY UPON VALID FIGURES FOR WATER CONSUMPTION AT EDWARDS
27 AIR FORCE BASE?

28 **A** FOR THE CURRENT CONSUMPTION I RELY ON

1 WATER -- THE MONTHLY WATER PRODUCTION REPORTS.

2 Q AND FOR YOUR PURPOSES HERE, TO GIVE AN
3 EXPERT OPINION ON FUTURE WATER DEMANDS, WHAT DID YOU
4 RELY UPON TO COME UP WITH YOUR ESTIMATE OF HOW MUCH
5 WATER IT WOULD REQUIRE FOR A 72 P.A.A. FIGHTER WING OR
6 ITS EQUIVALENT AT EDWARDS AIR FORCE BASE?

7 A WHAT WE WILL TYPICALLY DO FOR A STAFF
8 OFFICER IS --

9 MR. ZIMMER: THAT'S NOT RESPONSIVE. THE QUESTION
10 WAS WHAT DID HE DO, NOT WHAT HE WOULD TYPICALLY DO.

11 THE COURT: WELL, HE CAN ANSWER IT AS BEST HE CAN.
12 GO AHEAD.

13 THE WITNESS: WHAT I WILL TYPICALLY DO AND WHAT I
14 DID IN THIS CASE, SIR, IS I MET WITH MR. DIORIO AND I
15 REVIEWED THE SPREADSHEET IN DETAIL WITH HIM, LINE BY
16 LINE, QUESTIONING HIS ASSUMPTIONS AND VALIDATING HIS
17 CALCULATIONS, AND ULTIMATELY CONCURRED WITH HIS
18 ASSUMPTIONS AND HIS CALCULATIONS.

19 BY MR. LEININGER:

20 Q SO YOU THINK IT'S A VALID METHODOLOGY THAT
21 A FACILITIES -- AN EXPERT IN FACILITIES MANAGEMENT WOULD
22 USE TO MAKE A CALCULATION FOR FUTURE WATER USE?

23 A ABSOLUTELY. ANY BASE -- EXACTLY HOW ANY
24 BASE CIVIL ENGINEER WOULD DO IT.

25 Q AND WHAT WAS THE TOTAL VALUE THAT HE GAVE
26 YOU FOR THE ESTIMATE OF WATER USE FOR THE 72 P.A.A.?
27 WHAT WAS THE TOTAL ESTIMATE --

28 MR. KUHS: OBJECTION.

1 **MR. ZIMMER:** OBJECTION.

2 **BY MR. LEININGER:**

3 **Q** -- FOR A CALCULATION OF 72 P.A.A. FIGHTER
4 WING?

5 **THE COURT:** I'M GOING TO SUSTAIN THE OBJECTION AS
6 TO WHAT NUMBER HE GAVE TO THIS WITNESS. THAT'S NOT A
7 PROPER QUESTION.

8 THE QUESTION THAT I HAVE, MR. JUDKINS --

9 **THE WITNESS:** YES, YOUR HONOR.

10 **THE COURT:** -- YOU DEAL WITH WATER USAGE ON YOUR
11 BASE ON A REGULAR BASIS; IS THAT RIGHT?

12 **THE WITNESS:** YES, YOUR HONOR.

13 **THE COURT:** AND IT'S UNDER YOUR SUPERVISION THAT
14 THE NUMBERS FOR USAGE, IMPORTED AND OTHERWISE, ARE
15 CREATED; IS THAT CORRECT?

16 **THE WITNESS:** YES, YOUR HONOR.

17 **THE COURT:** AND THAT'S PART OF YOUR FUNCTION AS A
18 CIVIL ENGINEER, TO UNDERSTAND THOSE CONCEPTS?

19 **THE WITNESS:** YES, YOUR HONOR.

20 **THE COURT:** YOU'VE HAD TRAINING AND EDUCATION IN
21 THAT?

22 **THE WITNESS:** YES, YOUR HONOR.

23 **THE COURT:** AND YOU HAVE ON A PREVIOUS OCCASION
24 BEEN ASKED TO DETERMINE WHAT THE WATER USAGE MIGHT BE
25 FOR A FIGHTER WING ON ANOTHER LOCATION?

26 **THE WITNESS:** NOT THAT I RECALL, YOUR HONOR. I
27 HAVE BEEN INVOLVED IN ESTIMATING WATER REQUIREMENTS FOR
28 DEPLOYING INTO LOCATIONS.

1 **THE COURT:** YOU PROBABLY BETTER SPEAK INTO THE MIC
2 SO EVERYBODY CAN HEAR WHAT YOUR ANSWERS HERE ARE.

3 **THE WITNESS:** I HAVE BEEN RESPONSIBLE FOR
4 ORGANIZING AND LEADING DEPLOYMENTS INTO REMOTE LOCATIONS
5 AND ESTABLISHING THE UTILITY AND WATER REQUIREMENTS AT
6 THOSE LOCATIONS.

7 **THE COURT:** SO IN YOUR FUNCTION AS THE BASE CIVIL
8 ENGINEER, YOUR RESPONSIBILITIES FOR PRODUCING WATER OR
9 MAKING SURE THAT THERE'S SUFFICIENT WATER PRODUCED FROM
10 WHATEVER SOURCES --

11 **THE WITNESS:** YES, SIR.

12 **THE COURT:** -- YOU BELIEVE THAT THE BASE COULD
13 SUPPORT AN ADDITIONAL FIGHTER WING OR ITS EQUIVALENT; IS
14 THAT CORRECT?

15 **THE WITNESS:** YES, YOUR HONOR, I DO.

16 **THE COURT:** AND WHAT, IN YOUR OPINION, IS THE
17 AMOUNT OF WATER THAT IS NEEDED FOR AN ADDITIONAL FIGHTER
18 WING OR ITS EQUIVALENT ON EDWARDS AIR FORCE BASE?

19 **THE WITNESS:** ABOUT 4,900 ACRE-FEET.

20 **THE COURT:** ALL RIGHT.

21 **MR. LEININGER:** LET'S --

22 **THE COURT:** GO AHEAD.

23 **MR. ZIMMER:** NOTWITHSTANDING THE COURT'S ATTEMPTS
24 TO SQUARE AWAY THE FOUNDATION, I STILL DON'T THINK THE
25 FOUNDATION IS THERE AND THIS IS WHY --

26 **THE COURT:** OBJECTION IS OVERRULED.

27 **MR. ZIMMER:** WELL, CAN I MAKE A RECORD?

28 **THE COURT:** WELL, YOU'VE MADE YOUR RECORD. YOU

1 OBJECTED AND I UNDERSTAND THAT.

2 **MR. ZIMMER:** NO. I WANTED TO STATE THE REASON FOR
3 THE OBJECTION. THIS WITNESS JUST TESTIFIED THAT HE DOES
4 NOT -- HE HAS NEVER ESTIMATED THE WATER NEEDS FOR A
5 FUTURE FIGHTER WING.

6 HE TESTIFIED ALSO THAT HE RELIED SOLELY
7 UPON AN ESTIMATE THAT WAS DONE BY MR. DIORIO, SAID HE
8 WENT THROUGH IT LINE BY LINE WITH HIM, BUT WE HAVE NO
9 IDEA WHAT ASSUMPTIONS MR. DIORIO MADE AND THE BASIS UPON
10 WHICH THAT EXPERT OPINION, THAT ESTIMATE WAS MADE. THIS
11 WITNESS CAN'T TELL US THAT. THIS WITNESS DIDN'T DO IT
12 AND HE'S SIMPLY TAKING THE --

13 **THE COURT:** MR. ZIMMER, I'M NOT GOING TO ARGUE
14 WITH YOU. I'VE OVERRULED YOUR OBJECTION. THE REASON
15 THAT I HAVE IS THAT, IN MY OPINION, THE BASE CIVIL
16 ENGINEER, WITH HIS EXPERIENCE, CAN DETERMINE WHAT IS A
17 REASONABLE ESTIMATE OF WHAT WATER USAGE MIGHT BE
18 REQUIRED FOR AN ADDITIONAL FIGHTER WING. OKAY?

19 YOU'RE CERTAINLY WELCOME TO ATTACK THE
20 FOUNDATION FOR THAT, THE CREDIBILITY OF THE WITNESS,
21 CONTRARY EVIDENCE, BUT THIS WITNESS HAS SO TESTIFIED,
22 AND I WILL ACCEPT THAT TESTIMONY FOR WHAT IT IS. OKAY?

23 **BY MR. LEININGER:**

24 **Q** BEYOND THE CAPACITY OF EDWARDS AIR FORCE
25 BASE TO ACCEPT THE EQUIVALENCY OF A 72 P.A.A. FIGHTER
26 WING, WHICH I BELIEVE YOU JUST TESTIFIED WAS A WATER
27 DEMAND -- AN ADDITIONAL WATER DEMAND OF 4,900
28 ACRE-FEET --

1 **A** YES, SIR.

2 **Q** -- IS THERE ALSO AN ESTIMATE, BASED UPON
3 YOUR EXPERIENCE AS A FACILITIES MANAGER, IN YOUR
4 EXPERIENCE AT EDWARDS AIR FORCE BASE, AS TO A REASONABLE
5 DEMAND -- REASONABLE FUTURE DEMAND OF WATER BASED UPON
6 CURRENT MISSIONS AND REASONABLY FORESEEABLE FUTURE
7 MISSIONS, EXCLUSIVE OF THE 72 P.A.A. FIGHTER --

8 **THE COURT:** I DON'T UNDERSTAND THAT QUESTION,
9 MR. LEININGER. WHY DON'T YOU START AGAIN WITHOUT THE
10 PREFACE.

11 **BY MR. LEININGER:**

12 **Q** WHAT'S YOUR ESTIMATE OF -- EXCLUSIVE OF A
13 72 P.A.A. FIGHTER WING, WHAT'S YOUR ESTIMATE OF FUTURE
14 WATER DEMANDS FOR EDWARDS AIR FORCE BASE?

15 **A** I CAN TELL YOU HOW I REACHED THAT ESTIMATE.
16 I PRODUCED IT IN THE SPRING OF 2009. I LOOKED AT THE
17 AVERAGE CONSUMPTION OF THE INSTALLATION BASED ON THE
18 REPORTS THAT I HAVE FROM MY SHOPS AND CONFERRED WITH
19 MR. DIORIO AND ALSO CONFERRED WITH MR. SANDERS,
20 EVALUATED THE DATA BASED UPON WHAT WE KNEW ABOUT THE
21 MISSIONS AT THE INSTALLATION AND THE VARIABLE -- THE
22 VARIATIONS IN THOSE MISSIONS AND THE VARIATIONS IN OUR
23 CONSTRUCTION PROGRAMS -- AND, OF COURSE, THERE'S OUR
24 DEMOLITION AND THE RUNWAY CONSTRUCTION -- AND KNOWING
25 THAT WE GO THROUGH CYCLES OF FEAST OR FAMINE IN THE
26 MILITARY APPROPRIATION CYCLE, APPLIED WHAT I WILL CALL A
27 RISK AND UNCERTAINTY FACTOR OF 30 PERCENT.

28 I DID USE THE WORD "GUESS" WHEN I WAS

1 COMMUNICATING WITH MY WING COMMANDER BECAUSE HE WAS A
2 FIGHTER PILOT. HE'D BEEN A FIGHTER PILOT HIS WHOLE
3 LIFE, WAS COMPLETELY UNFAMILIAR WITH THE WORLD THAT I
4 WORKED IN, AND SO I COMMUNICATED IN VERY BRIEF TERMS TO
5 COLONEL GANDY HOW I ARRIVED AT THE 30 PERCENT FACTOR FOR
6 RISK AND UNCERTAINTY.

7 Q LET ME STOP YOU THERE JUST SO I UNDERSTAND
8 YOUR TESTIMONY. SO YOU'RE SAYING YOU TOOK A FIVE-YEAR
9 AVERAGE BASED UPON --

10 MR. KUHS: MISSTATES TESTIMONY. THERE WAS NO
11 TESTIMONY AS TO THE AVERAGE YEAR.

12 MR. LEININGER: WELL, THAT'S WHY I'M ASKING NOW.

13 THE COURT: BEST NOT TO RESTATE THE TESTIMONY.
14 ASK HIM THE QUESTION AGAIN.

15 BY MR. LEININGER:

16 Q AGAIN, THE FIGURE FOR PROJECTED MISSION
17 DEMAND, EXCLUSIVE OF THE 72 P.A.A. FIGHTER WING, WAS
18 BASED UPON WHAT NUMBER?

19 A I AVERAGED THE CONSUMPTION OF THE PREVIOUS
20 FIVE YEARS, I BELIEVE IT WAS.

21 Q PREVIOUS TO WHAT?

22 A 2009. I WAS DOING THE CALCULATION, I
23 BELIEVE, IN APRIL -- IT WAS APRIL OF 2009. AND THEN I
24 APPLIED THE 30 PERCENT RISK AND UNCERTAINTY --

25 Q LET'S STOP THERE. SO WHAT WAS THAT AVERAGE
26 FOR THE FIVE YEARS?

27 A I DON'T HAVE MY CHARTS IN FRONT OF ME. I
28 BELIEVE IT WAS ABOUT 4,500.

1 **Q** 4,500. WOULD IT REFRESH YOUR MEMORY IF WE
2 WENT BLACK TO THE TABLE?

3 **A** YES, IT WOULD.

4 **TECHNICAL ASSISTANT:** (INDICATING.)

5 **BY MR. LEININGER:**

6 **Q** SO 2009 TO 2004, APPROXIMATELY THAT AREA?
7 SORRY. EXACTLY THAT AREA?

8 **A** ENLARGE IT.

9 **Q** SO IN THERE YOU'RE MAKING AN ESTIMATE OF
10 AVERAGE CONSUMPTIVE USE AT EDWARDS AIR FORCE BASE; IS
11 THAT CORRECT?

12 **A** CORRECT.

13 **Q** NEXT.

14 NOW, YOU THEN STATED A 30 PERCENT FACTOR;
15 IS THAT CORRECT?

16 **A** THAT IS CORRECT.

17 **Q** AND THEN THAT 30 PERCENT FACTOR WAS IN
18 ADDITION TO THE 4,500?

19 **A** YES, IT WAS.

20 **Q** AND WHY DID YOU ADD 30 PERCENT?

21 **A** IT WAS BASED ON RISK AND UNCERTAINTY OF THE
22 DAILY -- OR THE OPERATIONS AT EDWARDS AIR FORCE BASE AND
23 JUST LOOKING AT THE DATA. AND BASED ON MY EXPERIENCE,
24 AS WELL AS MR. SANDERS' AND MR. DIORIO'S EXPERIENCE AT
25 THE INSTALLATION, AS TO THE VARIANCE WE SEE IN THE
26 MISSION AND THE IMPACT THAT IT MIGHT HAVE ON OUR WATER
27 DEMANDS, WE APPLIED THE 30 PERCENT FACTOR.

28 **Q** SO THE 4,500 PLUS THE 30 PERCENT FACTOR

1 YIELDED WHAT?

2 A SOMETHING LIKE 5,800.

3 Q 5,800. HOW DOES THAT COMPARE TO THE
4 FIGURES THAT YOU JUST SHOWED US FROM THE 1960S AND THE
5 EARLY 2000S?

6 A IT'S VERY COMPARABLE. VERY FAVORABLY.

7 Q IS IT LESS THAN THOSE HIGH --

8 A VERY --

9 Q -- YEARS IN --

10 A VERY CLOSE.

11 Q -- THE 1960S?

12 A VERY CLOSE.

13 Q ALL RIGHT. SO LET'S PUT THE TWO TOGETHER,
14 PLEASE. YOU'VE GOT A FACTOR OF 5,800 ACRE-FEET BASED
15 UPON CURRENT MISSION AND REASONABLE MISSION DEMAND.

16 A YES, SIR.

17 Q AND I BELIEVE YOU ALSO TESTIFIED TO AN
18 AMOUNT THAT WOULD BE NECESSARY, SHOWED A 72 P.A.A.
19 FIGHTER WING OR ITS EQUIVALENT COMING TO EDWARDS AIR
20 FORCE BASE.

21 A YES, SIR.

22 Q DO YOU KNOW WHAT THAT TOTAL OF THOSE TWO
23 VALUES IS?

24 A CAME OUT RIGHT AROUND 10,000 ACRE-FEET A
25 YEAR.

26 Q SO IT'S YOUR OPINION -- SO JUST GIVE ME
27 WHAT IT'S -- IN YOUR OPINION, WHAT IS A REASONABLE
28 AMOUNT OF WATER TO SATISFY EDWARDS AIR FORCE BASE'S

1 POTENTIAL AND REASONABLY FORESEEABLE FUTURE WATER NEEDS?

2 A 10,000 ACRE-FEET A YEAR.

3 MR. LEININGER: NO FURTHER QUESTIONS, YOUR HONOR.

4 THE COURT: WHO WANTS TO START? MR. KUHS?

5 MR. KUHS: YES.

6

7 (PAUSE IN THE PROCEEDINGS.)

8

9 THE COURT: I HAVE THE SUSPICION YOU'RE GOING TO
10 BE BACK NEXT WEEK, MR. JUDKINS.

11 THE WITNESS: YES, YOUR HONOR.

12

13

CROSS-EXAMINATION

14 BY MR. KUHS:

15 Q HI. GOOD AFTERNOON, MR. JUDKINS.

16 A GOOD AFTERNOON, SIR.

17 Q YOU RECALL WHEN WE LOOKED AT EXHIBIT 178?
18 THAT WAS THAT WATER TABLE OF WATER USE FOR EDWARDS AIR
19 FORCE BASE GOING BACK TO THE 1940S.

20 THE COURT: 178?

21 MR. KUHS: 178, YOUR HONOR.

22 THE WITNESS: YES, SIR, I HAVE IT HERE.

23 BY MR. KUHS:

24 Q AND I BELIEVE YOUR TESTIMONY WAS THAT YOU
25 DIDN'T PREPARE THIS AND YOU DIDN'T KNOW WHO PREPARED IT;
26 CORRECT?

27 A I BELIEVE MY TESTIMONY WAS I DID NOT -- I
28 HAD NOT SEEN IT BUT THAT I HAD ASKED FOR VERY SIMILAR

1 DATA AND RECEIVED THE SAME DATA IN OTHER FORMATS.

2 Q AND YOU WERE ABLE TO DETERMINE IN A MATTER
3 OF SECONDS THAT THIS DATA WAS CORRECT BASED UPON YOUR
4 RECOLLECTION OF PRIOR NUMBERS?

5 A I WAS ALSO ASKED IF I HAD SEEN THIS CHART
6 BEFORE, AND I ANSWERED YES, AND THEN I VERIFIED THAT I
7 BELIEVED THE NUMBERS TO BE ACCURATE.

8 Q YOU'RE AN ENGINEER?

9 A YES, SIR.

10 Q I TAKE IT YOU'RE PRETTY GOOD AT MATH.

11 A I PASSED MY MATH COURSE. YES, SIR.

12 Q ARE YOU CURRENTLY A LICENSED ENGINEER?

13 A NO, SIR, I'M NOT.

14 Q YOU HAVEN'T BEEN LICENSED SINCE YEAR 2000?

15 A THAT'S ABOUT -- YES, SIR.

16 Q YOU TESTIFIED THAT THE FUTURE DEMAND FOR
17 EDWARDS AIR FORCE BASE WAS 10,000 ACRE-FEET A YEAR.

18 A YES, SIR.

19 Q TELL ME HOW YOU GOT TO THAT NUMBER.

20 A WELL, IT WAS DONE IN THE SPRING OF '09.

21 AND I'LL APPROACH IT FROM A DIFFERENT DIRECTION THIS
22 TIME. I LOOKED BACK AT THE AVERAGE CONSUMPTION OF THE
23 INSTALLATION --

24 Q DURING WHAT YEARS?

25 A FOR THE PREVIOUS -- I DON'T HAVE MY NOTES
26 IN FRONT OF ME, SIR, SO I WOULD SAY THREE, FOUR, FIVE
27 YEARS.

28 Q WE CAN TAKE A MINUTE AND GET YOUR NOTES IF

1 THAT WOULD BE HELPFUL.

2 A THERE WAS AN EXHIBIT DURING THE DEPOSITION
3 THAT YOU HAD, BUT IT WAS THE PREVIOUS FOUR, FIVE YEARS.
4 LOOKED AT THE AVERAGE CONSUMPTION AND THEN APPLIED THE
5 30 PERCENT RISK AND UNCERTAINTY FACTOR. THAT WAS ONE
6 PORTION OF THE ESTIMATE.

7 Q WHAT NUMBER DID YOU GET TO? TELL ME WHAT
8 YOUR FIVE-YEAR AVERAGE WAS.

9 A SIR, I NEED TO SEE THE DOCUMENTS.

10 Q DO YOU KNOW WHAT YOUR 30 PERCENT RISK
11 FACTOR CALCULATION TO BE?

12 A I KNOW THAT THE TOTAL CAME OUT TO BE ABOUT
13 5,800-ACRE FEET.

14 Q WHAT NUMBER DID MR. JOE DIORIO GIVE YOU?

15 A JOE DIORIO ESTIMATED THE CONSUMPTION OR THE
16 DEMAND FOR A 72 P.A.A. FIGHTER WING AT EDWARDS AIR FORCE
17 BASE.

18 Q OKAY. AND YOUR OPINION AS TO THE DEMAND
19 FOR A 72 AIRCRAFT FIGHTER WING IS WHAT?

20 A I CONCURRED WITH MR. DIORIO'S ESTIMATE.

21 Q GIVE ME A NUMBER.

22 A OF COURSE. MY OPINION IS ROUGHLY 4,900,
23 4,894 ACRE-FEET.

24 Q 4,894 ACRE-FEET?

25 A YES, SIR.

26 Q THAT'S THE SAME NUMBER MR. DIORIO GAVE YOU?

27 A IT IS. AND AS I SAID EARLIER, I CAN CONCUR
28 WITH HIS CALCULATIONS.

1 Q WHEN IS IT THAT YOU AND MR. DIORIO HAD THIS
2 EXTENDED CONVERSATION AND WENT THROUGH LINE BY LINE THIS
3 ESTIMATE --

4 A IT WAS IN THE SPRING OF '09.

5 Q OKAY. HAS HE SINCE RETIRED?

6 A HE HAS.

7 Q SO IF I UNDERSTAND YOUR TESTIMONY, WE
8 SHOULD BE ABLE TO TAKE 10,000, WHICH IS YOUR OPINION OF
9 TOTAL DEMAND, MINUS 4,894, AND THAT OUGHT TO GIVE US
10 WHAT YOU THINK IS THE CURRENT DEMAND FOR WATER AT
11 EDWARDS AIR FORCE BASE; CORRECT?

12 A NO, SIR.

13 Q IT GIVES US WHAT NUMBER? CURRENT DEMAND
14 PLUS 30 PERCENT?

15 A AVERAGE DEMAND OVER A PERIOD OF FOUR OR
16 FIVE YEARS, WITH A 30 PERCENT RISK AND UNCERTAINTY.

17 Q IS THAT MATH YOU CAN DO IN YOUR HEAD, SIR?

18 A SIR, I DON'T LIKE TO DO PUBLIC MATH.

19 Q IF I GAVE YOU A CALCULATOR, WOULD THAT MAKE
20 IT EASIER FOR YOU?

21 A COULD USE MY OWN CALCULATOR.

22 Q GO AHEAD, PLEASE.

23 A I'M SORRY. I DON'T HAVE IT.

24 Q WOULD YOU LIKE TO BORROW MINE?

25 A HOW COULD I -- I'D LIKE TO USE MY OWN.

26 Q WOULD YOU HAVE ANY OBJECTION TO BORROWING
27 MINE? IT'S A TEXAS INSTRUMENTS.

28 A SURE. I'M NOT -- IS THAT -- WHAT ARE YOU

1 ASKING ME TO CALCULATE NOW?

2 Q I WANT YOU TO CALCULATE THE DIFFERENCE
3 BETWEEN THE NUMBER MR. DIORIO GAVE YOU AND YOUR OPINION
4 AS TO THIS FUTURE FIGHTER SQUADRON.

5 A CAN I HAVE A PIECE OF PAPER? BECAUSE I'M
6 NOT ALLOWED TO WRITE ON THIS I DON'T THINK.

7 Q YES. (INDICATING.)

8 A THANK YOU.

9 THE WITNESS: YOUR HONOR, DOES MY SCRATCH BECOME
10 EVIDENCE?

11 THE COURT: IT COULD.

12

13 (PAUSE IN THE PROCEEDINGS.)

14

15 THE WITNESS: THE NUMBER COMES OUT TO ABOUT
16 10,900. WHAT I HAVEN'T BEEN EXPLAINED IS THAT DURING
17 THE -- AND IT'S IN THE DEPOSITION AND IT'S ALSO IN THE
18 DOCUMENTS THAT YOU HAVE, THAT I ROUNDED A FEW OF THE
19 NUMBERS, AND THAT'S WHY I CAME -- I BELIEVE THAT'S HOW I
20 REACHED THE 10,000, SO.

21 BY MR. KUHS:

22 Q BUT YOU CAME UP WITH 10,900 AND YOU ROUNDED
23 DOWN? DOES 10,000 --

24 A AS I RECALL, BUT I NEED THE SOURCE DOCUMENT
25 TO VERIFY. YES.

26 Q OKAY. SO WHAT DID YOU ASSUME TO BE THE
27 CURRENT BASE DEMAND BEFORE YOU APPLIED A 30 PERCENT
28 MULTIPLIER?

1 **A** SIR, I DON'T RECALL. I NEED THE DOCUMENTS.

2 **Q** WHICH DOCUMENT IS IT THAT YOU NEED, SIR?

3 **A** I NEED THE E-MAIL THAT I SENT COLONEL
4 GANDY, WITH THE ATTACHMENTS.

5 **Q** OKAY. LET ME HAVE MARKED AS TEJON EXHIBIT
6 NUMBER 3, A STRING OF E-MAILS FROM MR. JUDKINS.

7 **THE COURT:** ALL RIGHT. NEXT IN ORDER.

8
9 (EXHIBIT TEJON-3, IDENTIFIED:
10 E-MAIL STRING FROM MR. JUDKINS,
11 APRIL 2009.)

12
13 **MR. KUHS:** (INDICATING.)

14 **THE WITNESS:** THANK YOU.

15 **MR. KUHS:** I HAVE THE ONE FOR THE COURT.

16 **BY MR. KUHS:**

17 **Q** WE'VE MARKED AS EXHIBIT 3, MR. JUDKINS, A
18 E-MAIL THAT APPEARS TO BE FROM YOU, IN ABOUT APRIL OF
19 2009. DOES THAT LOOK RIGHT?

20 **A** YES, SIR, IT DOES.

21 **Q** AND TO WHOM WERE YOU SENDING THIS E-MAIL?

22 **A** TO COLONEL GANDY.

23 **Q** AND AT WHOSE DIRECTION?

24 **A** I BELIEVE HE ASKED ME FOR IT.

25 **Q** AND IS IT ACCURATE THAT AT THE TIME YOU
26 SENT THIS E-MAIL YOU WERE TRYING TO DEVELOP A STRATEGY
27 TO MAXIMIZE EDWARDS AIR FORCE BASE WATER DEMAND FOR THIS
28 CASE?

1 **A** NO, SIR, IT WAS NOT.

2 **Q** HAVE YOU EVER BEEN UNDER PRESSURE FROM ANY
3 OF YOUR SUPERIORS OR ANY MILITARY FOLKS TO JUSTIFY A
4 DEMAND FOR WATER HIGHER THAN YOUR CURRENT DEMAND?

5 **A** ABSOLUTELY NOT.

6 **Q** WHOSE IDEA WAS IT TO LINK YOUR FUTURE
7 DEMAND FOR WATER TO AN ADDITIONAL FIGHTER SQUADRON?

8 **A** IT WAS MINE.

9 **Q** AND YOU THOUGHT THAT WAS THE BEST WAY TO
10 SELL YOUR FUTURE DEMAND FOR WATER TO THE COURT; CORRECT?

11 **A** NO, SIR.

12 **MR. LEININGER:** OBJECTION, ARGUMENTATIVE.

13 **BY MR. KUHS:**

14 **Q** LET'S GO THROUGH YOUR E-MAIL. BEFORE WE DO
15 THAT, WHY DON'T YOU TAKE A MINUTE TO REVIEW IT.

16 **A** SURE.

17 **Q** AND LET ME KNOW THE BASIS OF YOUR
18 CALCULATIONS.

19

20 (PAUSE IN THE PROCEEDINGS.)

21

22 **THE WITNESS:** SIR, DO YOU HAVE THE SPREADSHEETS
23 THAT WERE ATTACHED TO THE E-MAIL?

24

25 (PAUSE IN THE PROCEEDINGS.)

26

27 **THE COURT:** WHILE HE'S DOING THAT, MR. KUHS,
28 MR. ZIMMER, LET ME MAKE SURE THAT I UNDERSTAND WHAT THE

1 TESTIMONY HAS BEEN WITH REGARD TO THIS ADDITIONAL
2 POTENTIAL.

3 IT'S MY UNDERSTANDING THAT THE TESTIMONY IS
4 THAT THE BASE POTENTIALLY COULD HOLD AN ADDITIONAL
5 FIGHTER WING OR ITS EQUIVALENT, NOT THAT IT WAS GOING TO
6 HAVE THAT ADDITIONAL FUNCTION, BUT THAT IT COULD, AND IF
7 IT DID, THEN THIS ESTIMATE OF WATER USAGE WOULD BE A
8 NUMBER THAT WOULD BE REQUIRED IN THAT EVENT. BUT NOBODY
9 HAS TESTIFIED TO MY KNOWLEDGE, NEITHER THE GENERAL NOR
10 THIS WITNESS, THAT THAT IS A PROJECTION THAT ANYBODY
11 EXPECTS TO HAPPEN.

12 **MR. KUHS:** THAT WAS THE REASON FOR MY OBJECTION TO
13 THE TESTIMONY, YOUR HONOR, THAT WHAT WE'RE REALLY
14 TALKING ABOUT IS A SPECULATIVE PROPOSITION AT THE OUTSET
15 INSTEAD OF DEBATING WHAT MIGHT HAPPEN IN THE FUTURE.

16 **THE COURT:** IT'S NOT SPECULATION. IT'S A QUESTION
17 OF IF THAT WERE TO HAPPEN, WHAT WOULD THE NUMBERS BE?
18 AND FOR WHATEVER VALUE THAT QUESTION MIGHT BE, I DON'T
19 KNOW AT THIS POINT.

20 **MR. KUHS:** WELL, I GUESS --

21 **THE COURT:** NOBODY HAS OFFERED ANY EVIDENCE THAT
22 THE BASE IS GOING TO HAVE THAT REQUIREMENT. AND SO I
23 GUESS WHAT I'M SUGGESTING IS THAT IT MAY BE THAT YOU
24 DON'T HAVE TO SPEND QUITE AS MUCH TIME AS YOU ARE
25 SPENDING IN ORDER TO --

26 **MR. KUHS:** I APPRECIATE THAT.

27 **THE COURT:** -- CHALLENGE THAT ISSUE.

28 **MR. KUHS:** YOUR HONOR, THERE'S PROBLEMS ON BOTH

1 ENDS OF THE NUMBER. THERE'S PROBLEMS WITH THE
2 FOUNDATIONAL NUMBER OF THE CURRENT USE AND PROBLEMS WITH
3 THIS ADDITIONAL WING; SO I NEED TO GET AT THE BASIS -- I
4 NEED HIM TO TELL ME WHAT HIS STARTING POINT WAS SO I
5 UNDERSTAND THE CALCULATION.

6 **THE COURT:** I UNDERSTAND THAT. BUT MY POINT IS,
7 AS I INDICATED WHEN I RULED AND OVERRULED MR. ZIMMER'S
8 OBJECTION, THAT THIS IS AN OPINION. IT IS SUBJECT TO
9 CREDIBILITY ATTACKS, CROSS-EXAMINATION, AND CONTRARY
10 EVIDENCE, ASSUMING THAT THERE IS WEIGHT THAT SHOULD BE
11 GIVEN TO IT --

12 **MR. KUHS:** UNDERSTAND.

13 **THE COURT:** -- WHICH I HAVE NOT, OBVIOUSLY,
14 DECIDED.

15 **MR. ZIMMER:** THE WAY I RESPOND TO THAT, YOUR
16 HONOR, IS THAT THEY ARE ASKING FOR THAT AMOUNT OF WATER,
17 THE WAY I UNDERSTAND IT. IF THEY'RE NOT --

18 **THE COURT:** I STILL HAVE NOT HEARD THAT.

19 **MR. ZIMMER:** IF THEY'RE NOT, THEN I AGREE WITH THE
20 COURT. THEN WE DON'T --

21

22 (INDISCERNIBLE: SPEAKING SIMULTANEOUSLY.)

23

24 **THE COURT:** I HAVE NOT HEARD THAT REQUEST. IT MAY
25 COME UP, AND THE COURT WILL HAVE TO DECIDE BASED ON THE
26 EVIDENCE THAT HAS BEEN PRESENTED WHETHER OR NOT THAT IS
27 A NUMBER THAT SHOULD BE DETERMINED TO BE THE FEDERAL
28 RESERVE RIGHT, BUT AT THIS POINT THAT'S CERTAINLY NOT

1 ANYTHING THAT I HAVE ANY BASIS FOR DECIDING AT THIS
2 POINT.

3 I KNOW HOW MUCH IT'S CONTENDED THAT THE
4 WATER USAGE HAS BEEN [SIC]. THAT'S ALL I KNOW. AND I
5 HAVE NOT HEARD CONTRARY EVIDENCE TO THAT YET. SO THIS
6 IS A CASE IN PROGRESS.

7 GO AHEAD, MR. KUHS.

8 **BY MR. KUHS:**

9 Q MR. JUDKINS, IF IT'S ALL RIGHT WITH YOU,
10 WHAT I'D LIKE TO DO IS BACK UP FOR JUST A SECOND AND
11 DISCUSS SOME OF THE INFORMATION IN THIS CHART.

12 AND THEN I FOUND A COPY OF THE EXHIBITS
13 WHICH YOU BROUGHT TO YOUR DEPOSITION. I'D BE HAPPY TO
14 PROVIDE THOSE TO YOU IF THAT WOULD REFRESH YOUR
15 RECOLLECTION AS TO HOW YOU CALCULATED YOUR NUMBERS.

16 DOES THAT SOUND REASONABLE?

17 A YES, SIR. YES, SIR.

18 **MR. KUHS:** I'M GOING TO MARK AS TEJON NUMBER 4 A
19 CHART OF WATER USE AT EDWARDS AIR FORCE BASE.

20
21 (EXHIBIT TEJON-4, IDENTIFIED: WATER
22 USE CHART FOR EDWARDS AIR FORCE
23 BASE.)

24

25 **BY MR. KUHS:**

26 Q AND I'LL REPRESENT TO YOU, MR. JUDKINS,
27 THAT WHAT WE DID WAS TAKE THE NUMBERS FROM YOUR CHART,
28 PUT THEM IN AN EXCEL SPREADSHEET TO GENERATE THIS

1 PARTICULAR CHART, WHICH SHOWS IN THE RED EDWARDS AIR
2 FORCE BASE'S CLAIM -- WHAT WE UNDERSTAND TO BE THEIR
3 CLAIM, TOTAL WELL WATER USE, TOTAL AVEK WATER USE, AND
4 TOTAL WATER USE ALTOGETHER.

5 AND WOULD YOU TAKE A MINUTE AND COMPARE
6 THIS CHART AGAINST WHAT'S BEEN MARKED AS EXHIBIT 178, TO
7 TELL ME WHETHER OR NOT IT FAIRLY AND ACCURATELY
8 REPRESENTS THE NUMBERS?

9 AND FOR EXPEDIENCY, IF YOU WANT TO FOCUS ON
10 YOUR AREA OF EXPERTISE, WHICH WOULD BE 1997 FORWARD,
11 THAT WOULD BE HELPFUL.

12
13 (PAUSE IN THE PROCEEDINGS.)
14

15 **THE WITNESS:** SIR, HOW FAR DID YOU WANT ME TO GO?

16 **BY MR. KUHS:**

17 **Q** 1997.

18 **A** TILL THE PRESENT?

19 **Q** YES, SIR, TO 2012.

20 **A** THE CURVES -- I'M CHECKING THE NUMBERS, BUT
21 THE CURVES CERTAINLY LOOK LIKE YOU -- BONDED CORRECTLY.
22 I'LL CONTINUE LOOKING THROUGH IT OR GOING THROUGH IT.
23 I'M LOOKING JUST AT TOTAL CONSUMPTION, THOUGH.

24 **THE COURT:** CAN WE JUST CUT TO THE CHASE AND SAY
25 IT LOOKS APPROXIMATELY CORRECT?

26 **THE WITNESS:** YES, SIR. YES, YOUR HONOR. IT
27 LOOKS APPROXIMATELY CORRECT.

28 **MR. KUHS:** I UNDERSTAND, MR. JUDKINS, TRYING TO BE

1 DILIGENT HERE AND GET IT RIGHT. WE APPRECIATE THAT.

2 **BY MR. KUHS:**

3 **Q** MR. JUDKINS, WOULD YOU CALCULATE THE
4 FIVE-YEAR AVERAGE FOR 2008 AND BACKWARDS?

5 **A** HOW FAR? DO YOU WANT ME TO JUST RUN AN
6 AVERAGE CALCULATION?

7 **Q** AVERAGE CALCULATION FOR THE FIVE YEARS
8 PRECEDING 2009.

9 **A** 2008 OR 2009? INCLUDING 2008, SIR?

10 **Q** WHAT I'M TRYING TO FIGURE OUT, SIR, IS YOU
11 TESTIFIED THAT THE STARTING BASIS FOR YOUR ESTIMATE WAS
12 A FIVE-YEAR AVERAGE.

13 **A** YES, SIR.

14 **Q** AND YOU DID YOUR WORK IN 2009; SO I'M
15 ASSUMING YOU DIDN'T USE 2009 DATA.

16 **A** NO. WE STARTED IN 2008 -- I THINK YOU SAID
17 PRIOR TO 2008.

18 **Q** SO IT WOULD BE YEAR 2008?

19 **A** UH-HUH. SO USING THIS CHART HERE.

20 **Q** YES, SIR.

21

22 (PAUSE IN THE PROCEEDINGS.)

23

24 **THE COURT:** ARE YOU USING A GRAPH OR ARE YOU USING
25 AN EXHIBIT?

26 **THE WITNESS:** I'M USING THE EXHIBIT IN THE CHART,
27 YOUR HONOR. I JUST WANTED TO DOUBLE-CHECK SOMETHING.

28 **THE COURT:** YEAH, 178.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

(PAUSE IN THE PROCEEDINGS.)

BY MR. KUHS:

Q DID YOU ARRIVE AT AN AVERAGE, SIR?

A SIR, I'M STILL CALCULATING.

Q OKAY.

(PAUSE IN THE PROCEEDINGS.)

THE WITNESS: THE EXACT NUMBER COMES OUT TO 4,285;
SO I'M QUITE SURE I JUST ROUNDED UP FROM 43 TO 45.

BY MR. KUHS:

Q 4,285?

A YES, SIR.

Q OKAY. AND THEN YOU APPLIED A 30 PERCENT
FACTOR?

A WELL, I PROBABLY ROUNDED UP TO 45 AND THEN
APPLIED THE 30 PERCENT RISK AND UNCERTAINTY.

Q OKAY. WELL, IF YOU JUST APPLIED YOUR
30 PERCENT RISK AND UNCERTAINTY TO THE ACTUAL AVERAGE,
WHAT WOULD THAT BE?

(PAUSE IN THE PROCEEDINGS.)

THE WITNESS: THAT NUMBER COMES OUT TO 5570.5.
5570.

1 BY MR. KUHS:

2 Q AND CAN YOU ARTICULATE TO ME THE REASON
3 THAT YOU APPLIED 30 PERCENT UPWARD ADJUSTMENT?

4 A YES, SIR. IT WAS BASED ON THE -- WHAT WE
5 CALL THE RISK AND UNCERTAINTY OF THE MISSIONS AT EDWARDS
6 AIR FORCE BASE. AND THAT WAS MY OPINION, ALONG WITH THE
7 SUPPORT OF THE OPINIONS FROM MR. DIORIO AS WELL AS
8 MR. SANDERS.

9 Q I DON'T WANT TO GET INTO THEIR OPINIONS. I
10 JUST WANT TO KNOW WHAT YOUR OPINION IS.

11 A MY OPINION, BASED UPON RISK AND UNCERTAINTY
12 AND VARIABILITY OF OUR MISSION AND THE CONSTRUCTION
13 SCHEDULE, THE ACTIVITIES ON THE INSTALLATION, THAT A
14 30 PERCENT RISK AND UNCERTAINTY WAS NOT AN
15 OVERSTATEMENT.

16 Q SO YOU WERE TRYING TO ACCOUNT FOR WHAT I
17 THINK MR. BREWER CALLED EBBS AND FLOWS IN THE ACTIVITY?

18 A AS WELL -- YES, SIR, AS WELL AS UNKNOWNNS.

19 Q AND COULDN'T YOU ACCOUNT FOR THOSE BY DOING
20 A LONG-TERM AVERAGE?

21 A I WOULDN'T THINK SO, BECAUSE OF THE NATURE
22 OF OUR MISSION. IT HAS CHANGED SO MUCH.

23 Q IF YOU TOOK, FOR EXAMPLE, AN 18 OR 20-YEAR
24 AVERAGE OF YOUR WATER PRODUCTION, WOULDN'T THAT ACCOUNT
25 FOR JUST ABOUT EVERY EBB AND FLOW THAT YOU'RE LIKELY TO
26 ENCOUNTER FOR THE NEXT 20 YEARS?

27 A I DON'T BELIEVE SO, NOT FOR AN INSTALLATION
28 SUCH AS OURS, WITH THE TEST MISSIONS THAT WE HAVE.

1 **Q** DID YOU RELY ON ANY ENGINEERING TEXTS OR
2 MANUALS IN --

3 **A** NO, SIR.

4 **Q** -- ARRIVING AT THIS 30 PERCENT?

5 **A** I'M SORRY. NO, SIR.

6 **Q** DID YOU DO ANY ANALYSIS OF PRIOR PROJECTS
7 TO ARRIVE AT THIS 30 PERCENT?

8 **A** NO, SIR. IT WAS BASED ON MY EXPERIENCE.

9 **Q** AND I THINK YOU CALLED IN YOUR DEPOSITION,
10 ENGINEERING JUDGMENT?

11 **A** I BELIEVE THAT IS CORRECT.

12 **Q** OKAY.

13 **THE COURT:** ALL RIGHT. WE'LL TAKE OUR RECESS AT
14 THIS TIME. IT'S 3:30. NOW, WE'RE GOING TO RESUME HERE
15 ON TUESDAY, THE 17TH [SIC] AT 9:00 A.M.

16 I EXPECT TO BE HERE ALL WEEK, HEARING THE
17 BALANCE OF THE ISSUES CONCERNING FEDERAL RESERVE RIGHT,
18 AS WELL AS THE RETURN FLOW ISSUES THAT ARE STILL TO BE
19 DECIDED IN THIS PHASE.

20 I HAD HOPED THERE WOULD BE A NUMBER OF
21 STIPULATIONS TO UNDISPUTED FACTS IN THIS PHASE, AS WELL
22 AS THE RETURN FLOW PHASE. SO FAR I'VE BEEN DISAPPOINTED
23 THAT HAS NOT OCCURRED. I'M VERY HOPEFUL THAT YOU WILL
24 WORK HARD TO SEE IF YOU CAN ARRIVE AT STIPULATIONS WITH
25 REGARD TO THE OTHER ISSUES TO BE DECIDED, BOTH IN THIS
26 PHASE REGARDING FEDERAL RESERVE RIGHTS, AS WELL AS
27 RETURN FLOWS.

28 THESE ARE PRINCIPALLY LEGAL ISSUES, NOT

1 FACTUAL ISSUES IN DISPUTE, ALTHOUGH SOMETIMES WE
2 MANUFACTURE FACTUAL ISSUES IN DISPUTE WHERE THEY DON'T
3 EXIST. SO I'M GOING TO URGE YOU TO SEE IF YOU CAN ENTER
4 INTO STIPULATIONS REGARDING FACTS SO THAT WE CAN GET
5 THROUGH THE RETURN FLOW PORTION OF THIS TRIAL WITHIN THE
6 WEEK.

7 IF WE ARE NOT ABLE TO AND IF WE HAVE TO
8 RESUME ON THE FOLLOWING WEEK, IT WILL NOT BE THE 24TH OR
9 25TH, WHICH IS A MONDAY AND TUESDAY. IT'S POSSIBLE THAT
10 IT COULD BE THE 26TH, 7TH AND 8TH. IF THAT OCCURS, I
11 MIGHT ASK YOU TO COME TO SAN JOSE FOR THOSE THREE DAYS
12 AND SEE IF WE CAN COMPLETE THIS SO THAT I CAN DO A
13 PARTIAL STATEMENT OF DECISION REGARDING -- THROUGH PHASE
14 FIVE.

15 OKAY. SO I APPRECIATE ALL OF YOUR EFFORTS.
16 IT'S NOT AN EASY CASE IN MANY WAYS FOR YOU. I
17 UNDERSTAND THAT. AND THERE'S ALSO APPARENTLY SOME LEVEL
18 OF EMOTION THAT'S INVOLVED IN THIS CASE SOMEHOW.

19 IN ANY EVENT, THANK YOU VERY MUCH. I WILL
20 SEE YOU NEXT WEEK. ENJOY LINCOLN'S BIRTHDAY AND
21 PRESIDENTS' DAY, DURING WHICH WE CANNOT BE IN SESSION,
22 AS YOU KNOW.

23
24 (THE PROCEEDINGS WERE ADJOURNED
25 UNTIL FEBRUARY 18, 2014, AT 9:20
26 A.M.)
27
28

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES
DEPARTMENT 3 HON. JACK KOMAR, JUDGE

IN RE)
)
)
ANTELOPE VALLEY GROUNDWATER CASES.)
) CASE NO. JCCP4408
)
)
) REPORTER'S
) CERTIFICATE
_____)

I, RHONA S. REDDIX, OFFICIAL REPORTER OF
THE SUPERIOR COURT OF THE STATE OF CALIFORNIA, FOR THE
COUNTY OF LOS ANGELES, DO HEREBY CERTIFY THAT THE
FOREGOING PAGES, 1 THROUGH 207, COMPRISE A FULL, TRUE
AND CORRECT TRANSCRIPT OF THE PROCEEDINGS TAKEN IN THE
ABOVE ENTITLED CAUSE ON FEBRUARY 11, 2014.

DATED THIS 26TH OF FEBRUARY, 2014.

Rhona S. Reddy, CSR, RPR, RMR, CRR #10807
OFFICIAL REPORTER

\$	15,000 FEET [1] 155/4	1980S [5] 9/25 32/12 35/15 55/3 63/23
\$100 [1] 134/11	150 FEET [1] 155/6	1981 [1] 9/23
\$100 MILLION [1] 134/11	154 [1] 3/19	1982 [1] 8/10
\$60 [1] 89/18	15E [1] 73/9	1984 [1] 9/20
\$600,000 [1] 169/16	15E'S [1] 134/6	1986 [1] 9/10
'	15S [1] 177/4	1989 [3] 23/26 24/10 24/11
'06 [1] 169/8	16 [17] 25/3 25/19 35/12 41/23 51/2 54/22	1990S [2] 10/4 54/23
'07 [1] 169/8	87/17 89/5 89/16 89/17 89/21 89/22 90/1	1991 [1] 8/19
'09 [2] 193/20 195/4	99/9 102/8 125/28 134/5	1992 [3] 7/16 9/9 9/9
'40S [4] 106/11 106/22 135/3 137/25	16'S [1] 73/6	1993 [1] 7/19
'41 [2] 31/22 45/21	164 [1] 151/28	1995 [1] 99/2
'50S [3] 106/23 106/28 137/25	1665 [1] 5/8	1996 [1] 173/5
'64 [1] 173/16	167 [1] 153/25	1997 [4] 174/27 175/2 202/10 202/17
'65 [1] 173/16	168 [3] 3/19 154/1 154/3	1998 [1] 170/23
'95 [1] 81/10	16S [3] 155/15 177/3 177/4	1998-99 [1] 81/11
'CAUSE [2] 85/25 101/18	17 [2] 78/1 159/10	19TH [2] 37/10 37/23
0	17 MILES [1] 147/24	1:00 [1] 113/27
007 [3] 3/16 68/2 68/13	17'S [1] 76/24	1:00 O'CLOCK [3] 113/10 113/13 113/24
04 [1] 155/3	170 [1] 86/10	2
042201 [1] 6/16	172 [1] 3/20	2 PERCENT [3] 124/18 171/19 171/19
044004 [1] 12/6	175,000 POUNDS [1] 29/15	2,000 [1] 17/24
044007 [1] 16/27	178 [9] 3/20 172/3 172/8 172/20 192/17	2,089 [1] 151/24
045930 [1] 62/1	192/20 192/21 202/6 203/28	2,200 [1] 58/1
051949 [1] 37/16	17TH [1] 206/15	2,584 [1] 175/22
1	18 [2] 205/23 207/25	2,714 [1] 151/28
1 MILLION [1] 151/11	180 [1] 3/21	2,814 [1] 175/22
1,400 [3] 16/15 57/21 57/25	180 MILES [1] 86/11	2.1 [1] 124/1
1.5 MILLION [1] 158/24	185 FEET [1] 156/10	20 [7] 71/7 75/4 94/15 112/23 132/19 135/13
1.8 MILLION [1] 151/12	187 [4] 3/21 179/5 180/18 180/24	205/26
10 [4] 15/8 48/23 71/7 97/23	19 [2] 94/13 94/15	20 MINUTES [1] 76/8
10 PARTS [1] 169/8	1915 [1] 33/20	20 PERCENT [1] 124/16
10,000 [6] 191/24 192/2 193/17 195/8 196/20	192 [1] 3/5	20 YEARS [1] 128/14
196/23	1920S [3] 17/15 49/10 49/17	20-YEAR [1] 205/23
10,808 [1] 153/17	1930 [1] 48/6	200 [1] 86/10
10,900 [2] 196/16 196/22	1930S [10] 11/8 13/1 15/4 16/17 43/5 47/16	2000 [11] 10/4 173/19 173/20 173/27 174/1
10-TO-1 [1] 57/27	49/11 49/17 50/9 59/13	175/5 175/8 175/9 175/18 176/2 193/14
100 [1] 22/11	1933 [5] 13/27 42/5 42/13 42/15 42/20	2000-POUND [1] 41/6
101 [1] 22/11	1934 [1] 13/12	2000S [1] 191/5
102 [1] 22/11	1936 [3] 15/22 57/20 58/8	2001 [7] 173/7 173/20 173/20 173/27 174/2
104 [2] 22/11 160/25	1939 [2] 59/4 59/15	175/8 175/9
10807 [4] 2/28 1/5 114/5 208/23	194 [11] 3/22 74/1 74/3 74/4 74/23 75/8	2002 [2] 8/21 144/15
11 [5] 1/12 3/18 1/3 114/3 208/16	90/15 98/6 98/7 140/2 140/20	2004 [1] 190/6
11.7 MILLION [1] 151/7	194 MILES [1] 151/9	2007 [1] 124/15
111 [2] 27/20 55/5	1940 [6] 17/21 31/22 40/22 44/8 45/21	2008 [6] 203/4 203/9 203/9 203/16 203/17
111'S [1] 73/9	138/23	203/18
114 [1] 3/4	1940S [2] 32/11 192/19	2009 [10] 188/16 189/22 189/23 190/6
117 [1] 3/24	1941 [5] 17/20 18/5 18/15 58/10 59/6	197/11 197/19 203/8 203/9 203/14 203/15
12 [2] 56/23 71/9	1942 [2] 47/27 48/1	201 [1] 3/15
12,000 FEET [1] 155/6	1944 [5] 41/10 41/18 41/23 42/2 43/23	2010 [2] 36/8 124/17
121 [1] 3/11	1945 [1] 59/7	2011 [2] 175/21 175/22
123 [1] 3/12	1946 [4] 9/23 21/26 56/4 56/12	2012 [5] 172/18 172/21 175/21 175/22
125 [2] 11/21 11/22	1947 [3] 21/13 21/26 172/17	202/19
126 [3] 3/18 11/25 64/20	1947-2012 [1] 172/21	2013 [4] 36/11 36/12 36/13 162/2
130 [1] 93/16	1949 [2] 14/13 56/11	2014 [6] 1/12 1/3 114/3 207/25 208/16
131 FEET [1] 155/28	1950 [1] 14/16	208/17
135 [1] 155/28	1950S [3] 24/17 28/27 35/4	2020 [2] 124/15 124/17
136 [1] 3/4	1954 [1] 43/24	2040 [1] 36/5
138 [1] 3/4	1955 [1] 22/15	207 [1] 208/14
14 [3] 21/13 131/16 174/19	1957 [1] 29/1	20TH [1] 37/26
14 MILES [2] 91/20 94/17	1958 [1] 56/7	21ST [1] 37/28
14,000 [2] 16/15 57/24	1959 [1] 56/8	22 [7] 51/2 82/6 84/1 84/1 134/6 155/3
14-MILE [1] 75/28	196 [6] 3/23 101/14 101/14 148/9 148/13	155/12
140 [4] 3/11 3/12 3/22 3/24	148/26	22'S [1] 99/10
141 [2] 3/5 3/17	1960S [7] 30/13 173/10 174/6 174/10 174/24	221 [6] 3/24 116/5 117/5 140/5 140/9 140/20
148 [1] 3/23	191/4 191/11	22890 [1] 162/3
15 [10] 35/1 57/1 61/7 127/27 129/10 129/15	1964 [2] 43/25 173/16	22S [1] 156/27
129/22 129/23 134/6 174/20	1965 [2] 60/20 173/17	237 [1] 151/27
15 PLUS [1] 126/22	1966 [1] 60/23	24 [1] 71/9
15 YEARS [2] 129/12 129/27	197 [1] 3/13	243 [4] 3/25 84/26 84/28 85/11
15'S [2] 73/6 102/8	1970 [1] 7/6	24TH [1] 207/8
	1974 [2] 142/20 143/2	25 [1] 51/2
	1975 [1] 7/11	25 POUNDS [1] 41/8
	1976 [1] 9/4	

2	23/4 23/8 23/9 23/14 23/18 24/1 24/3 24/12 24/14 24/15 24/18 31/15 31/15 52/11 52/18 57/9 57/18 102/22 420 [2] 142/6 145/7 43 [1] 204/12 43820 [1] 162/3 43887 [1] 154/1 43890 [1] 162/7 43903 [1] 161/24 43913 [1] 149/25 43918 [2] 148/9 148/14 43968 [1] 116/6 44001 [1] 96/14 45 [3] 131/16 204/12 204/18 45 SQUARE [1] 75/3 45-MINUTE [1] 91/22 4500 [1] 179/28 45931 [1] 62/3 45940 [1] 62/4 45941 [1] 141/13 45976 [1] 84/27 46 [2] 72/23 110/28 48 [1] 32/15	191/18 74 [1] 3/22 7TH [2] 137/13 207/10
2508 [7] 97/1 97/12 100/1 100/3 100/5 102/6 109/3 2515 [1] 102/25 253 [1] 96/13 255 [3] 3/26 61/28 64/20 25TH [1] 207/9 26 PERCENT [3] 124/2 124/15 171/20 26,000 [2] 17/23 57/28 260 [4] 3/27 37/15 37/18 64/21 26TH [2] 207/10 208/17 270 MILES [1] 151/8 28 [1] 99/2 28 YEARS [1] 96/16 29,000 FEET [1] 151/6	8 8,000 FEET [1] 155/1 80 [2] 41/14 134/10 80-MILE [1] 99/7 800 ACRES [1] 156/23 810S [1] 177/3 82 [1] 55/6 85 [1] 3/25 897 [2] 154/13 154/14 897-V [1] 5/7 8:00 O'CLOCK [2] 97/22 97/23 8TH [1] 207/10	
3	3 FEET [1] 77/3 3 MILLION [1] 167/1 3,236 [1] 151/25 3,800 [1] 151/10 30 [10] 71/7 112/23 127/18 128/9 129/4 130/6 132/19 133/24 135/5 135/8 30 MILES [1] 147/24 30 PERCENT [20] 188/27 189/5 189/24 190/14 190/17 190/20 190/27 190/28 194/5 194/10 195/14 195/16 196/27 204/16 204/19 204/21 205/3 205/14 206/4 206/7 30 SECONDS [1] 113/3 30 SECONDS' [1] 105/10 30 YEARS [3] 129/7 130/3 135/9 30-YEAR [1] 131/13 300 FEET [2] 154/28 155/3 300,000 [2] 58/3 98/4 300,000 ACRES [1] 76/10 300,000 POUNDS [1] 86/10 307,000 ACRES [1] 76/11 308,000 ACRES [2] 147/24 151/6 325 NORTH [1] 141/4 32579-1665 [1] 5/8 33RD [1] 137/16 345 [1] 96/2 35 [16] 15/14 48/23 48/27 63/3 77/2 79/12 84/1 99/17 99/19 99/19 103/15 107/27 110/25 126/17 134/7 134/8 35 MILES [1] 159/28 35'S [1] 99/10 350 DAYS [1] 96/2 361 [2] 95/18 95/28 361 DAYS [1] 95/21 37 [2] 3/27 51/1 38 [1] 3/3 3:30 [3] 113/12 113/13 206/14	9 9.5 MILLION [1] 151/11 93524 [1] 141/5 95TH [1] 144/12 96 [1] 78/19 97 [1] 47/25 99 [1] 81/11 9:00 [1] 96/25 9:00 A.M [1] 206/15 9:00 O'CLOCK [1] 96/26 9:20 [1] 207/25
4	5 5,000 FEET [1] 155/7 5,800 [3] 191/2 191/3 191/14 5,800-ACRE [1] 194/13 50 [10] 85/21 106/5 112/17 130/4 133/23 133/24 135/13 137/24 137/28 169/8 50 YEAR [1] 85/24 50 YEARS [1] 128/27 50,000'S [1] 161/25 50-YEAR [1] 138/10 500-POUND [2] 55/6 55/10 50671 [1] 101/14 50673 [2] 148/27 149/8 51 [1] 35/21 51900 [2] 74/2 74/5 51901 [1] 90/15 51903 [1] 98/7 51905 [1] 75/7 52 [10] 36/5 83/24 85/20 85/20 110/25 112/7 128/13 129/21 156/9 166/8 52S [2] 156/9 156/10 53 [1] 3/3 532 [1] 142/6 5570 [1] 204/27 5570.5 [1] 204/26 5674 [1] 149/27 573 MILES [1] 151/8 59 [1] 20/1 59 MILES [1] 151/7	A A CHANGE [1] 40/22 A SUBSCALE [1] 32/22 A.F.R [2] 174/17 174/17 A.F.R.L [5] 79/25 80/11 80/13 118/18 118/20 A.F.T.C [3] 78/14 78/15 78/21 A.F.T.C. [1] 115/7 A.F.T.C. COMMANDER [1] 115/7 A.F.T.I [1] 35/16 A.M [3] 1/6 206/15 207/26 A.V [1] 2/8 AAFES [1] 167/16 ABBEY [1] 2/10 ABILITY [11] 36/28 77/23 77/27 92/25 93/12 97/27 100/12 102/13 104/25 108/13 108/20 ABLE [17] 26/1 34/18 57/14 70/20 89/7 93/14 100/15 100/21 100/28 102/10 106/24 107/1 107/4 168/22 193/2 195/8 207/7 ABOUT [132] 11/5 12/7 16/15 17/23 17/24 26/12 29/2 34/15 36/1 36/5 37/26 39/5 40/17 41/5 41/6 41/7 42/15 42/17 46/7 47/27 50/21 56/4 57/28 62/14 62/26 66/19 67/2 70/6 71/22 72/25 73/27 74/16 74/16 75/13 76/18 76/27 77/24 81/1 81/4 81/15 83/17 84/6 87/14 90/6 90/13 90/22 91/5 92/8 92/8 92/9 93/18 94/13 95/8 95/15 96/7 96/7 97/12 97/17 98/3 98/16 99/10 100/26 100/27 101/16 101/17 101/21 102/9 103/11 103/11 103/24 105/9 105/28 106/9 108/21 109/16 110/22 111/18 111/22 112/7 112/15 112/16 112/27 118/25 119/7 124/1 127/7 127/23 128/18 128/20 128/21 128/26 129/7 129/25 131/6 135/2 135/8 136/22 137/3 137/4 146/16 147/24 150/25 152/28 155/7 156/9 156/21 156/21 156/23 157/8 158/28 163/10 163/12 164/3 170/13 170/21 171/3 171/4 175/2 176/14 178/11 179/10 182/20 183/12 186/19 188/20 189/28 193/15 194/12 196/15 197/18 199/14 205/25 ABOVE [4] 21/21 29/7 71/3 208/16 ABSOLUTELY [10] 94/12 94/28 96/22 97/10 97/24 97/28 137/13 172/2 184/23 198/5
4,285 [2] 204/11 204/14 4,500 [5] 178/7 189/28 190/1 190/18 190/28 4,884 [1] 151/25 4,894 [3] 194/23 194/24 195/9 4,900 [3] 186/19 187/27 194/22 40 [3] 1/27 128/9 133/24 40 YEARS [1] 71/7 40,000 [8] 17/28 19/22 47/14 58/11 58/11 58/13 58/15 58/26 40,000-FOOT [1] 57/17 400,000 [1] 155/17 4079 [1] 67/13 40790 [1] 67/25 41 [1] 129/14 412 [5] 22/25 65/13 66/17 72/12 78/18 413 [1] 171/14 416 [1] 171/13 42 [24] 10/17 10/17 22/12 22/17 22/19 23/2	6 6 MILES [2] 37/11 37/24 6,000 MILES [1] 38/4 6,660 [1] 174/3 6,750 [1] 174/2 60 MILES [1] 37/27 600 MILES [1] 37/28 62 [1] 3/3 64 [5] 3/14 3/18 3/26 3/27 44/26 65 SQUARE [2] 19/4 25/26 66 [1] 3/4 68 [1] 3/16	
	7 7,200 [1] 173/16 7,500 [1] 173/17 72 [11] 134/14 177/2 178/13 178/25 184/5 184/26 187/25 188/7 189/17 194/16 194/19 72 MILES [1] 151/10 72 P.A.A [5] 178/10 181/5 185/3 188/13	

A		
ACADEMY [1] 142/19	ADVISER [1] 8/25	45/17 47/1 47/24 54/24 55/4 55/5 57/1 57/21
ACCELERATE [1] 59/17	ADVISORY [2] 33/20 56/6	57/28 58/4 58/7 58/18 60/4 62/24 62/28
ACCELERATING [1] 36/19	AERIAL [2] 32/25 78/6	62/28 63/2 78/1 78/12 78/12 81/12 81/13
ACCEPT [7] 43/10 52/3 126/22 176/19	AERO [1] 139/14	82/14 82/15 82/17 82/20 83/18 83/20 84/18
176/28 187/22 187/25	AEROBIC [1] 161/2	85/28 86/3 86/5 86/12 88/4 88/12 88/16
ACCEPTANCE [1] 126/14	AERODYNAMIC [3] 20/24 20/25 35/9	88/18 89/5 89/6 89/13 89/15 90/3 99/21
ACCESS [2] 155/8 156/8	AERODYNAMICALLY [1] 20/27	100/14 100/28 101/4 101/26 102/19 103/12
ACCIDENT [2] 26/22 145/23	AERODYNAMICS [2] 31/27 79/21	103/17 103/22 104/6 104/21 105/3 109/6
ACCOMPLISH [1] 125/21	AEROJET [1] 30/1	109/11 126/20 126/21 129/26 130/22 134/13
ACCOMPLISHING [1] 64/5	AEROMEDICAL [1] 146/19	134/14 145/16 145/23 166/17 177/2 178/15
ACCOUNT [3] 205/16 205/19 205/24	AERONAUTICAL [4] 7/24 10/8 81/7 98/15	194/19
ACCURATE [10] 18/26 52/4 117/28 120/28	AERONAUTICS [8] 7/23 9/6 10/2 30/22	AIRCRAFT'S [1] 90/4
125/24 142/4 161/28 173/2 193/7 197/25	31/27 33/20 40/15 56/6	AIRFIELD [3] 21/19 91/6 109/7
ACCURATELY [4] 52/18 68/22 120/26	AEROSPACE [6] 7/8 7/12 8/25 11/16 32/5	AIRFIELDS [1] 108/13
202/7	37/9	AIRLINE [2] 38/1 180/6
ACHIEVE [4] 44/16 71/25 126/8 169/13	AFFECT [5] 87/25 92/26 93/10 93/19 93/27	AIRLINERS [1] 44/9
ACHIEVES [1] 38/6	AFFECTS [1] 92/24	AIRMEN [5] 90/10 91/17 93/25 94/10
ACQUIRED [1] 53/7	AFFILIATIONS [2] 7/21 7/22	160/10
ACQUISITION [1] 59/15	AFFORD [2] 107/17 128/3	AIRPLANE [25] 15/10 20/2 21/14 27/26
ACRE [16] 98/4 173/17 173/18 174/2 174/3	AFFORDABLE [1] 107/17	35/22 46/25 81/16 81/17 81/17 81/20 81/26
175/22 178/7 186/19 187/28 191/14 191/24	AFIELD [1] 60/9	82/18 84/22 85/21 86/9 86/9 91/26 93/18
192/2 193/17 194/13 194/23 194/24	AFOTEC [1] 122/6	97/24 101/4 103/21 104/18 126/23 126/23
ACRE-FEET [14] 173/17 173/18 174/2	AFRAID [2] 4/27 104/17	166/12
174/3 175/22 178/7 186/19 187/28 191/14	AFTER [8] 8/22 22/27 49/18 58/28 143/15	AIRPLANES [22] 12/17 17/24 22/12 23/18
191/24 192/2 193/17 194/23 194/24	162/21 164/14 183/8	35/1 39/22 39/23 43/24 43/25 44/8 55/2 55/2
ACRES [5] 76/10 76/11 147/24 151/6	AFTERNOON [4] 113/12 114/19 192/15	56/25 57/25 58/1 58/3 63/1 83/22 85/24
156/23	192/16	96/16 99/16 145/15
ACRONYM [1] 158/9	AFTERWARDS [1] 9/11	AIRPORT [1] 143/19
ACRONYMS [1] 70/7	AGAIN [93] 7/12 22/28 28/9 31/14 31/25	AIRPOWER [3] 7/26 15/16 38/18
ACROSS [8] 72/26 75/19 93/2 99/18 100/13	32/9 36/24 45/18 46/19 58/6 66/16 67/1	AIRSPACE [36] 73/11 73/14 75/15 95/14
101/8 118/17 153/4	72/12 76/12 77/7 77/9 78/7 78/15 78/17	96/7 96/8 96/9 96/11 96/18 96/21 96/21
ACT [3] 33/21 33/23 56/8	78/24 79/17 80/20 81/4 81/5 82/8 84/10 85/6	96/26 97/1 97/8 97/12 98/1 98/14 98/18
ACTI [1] 103/20	86/14 86/22 86/24 89/3 89/13 90/8 90/19	98/26 98/28 99/12 99/23 99/26 99/26 101/16
ACTION [1] 131/3	91/15 91/17 91/23 91/24 92/8 92/11 92/17	101/17 101/20 101/24 102/21 108/1 108/2
ACTIVE [3] 151/24 152/9 160/10	92/21 93/12 95/16 95/27 97/28 98/3 100/11	108/22 110/3 110/3 110/12 110/14
ACTIVITIES [13] 11/2 11/9 19/23 24/18	100/15 100/15 100/20 101/7 104/15 109/13	AIRSPACES [1] 102/27
24/19 35/20 47/18 47/23 64/3 119/1 119/17	109/19 118/21 118/22 118/24 122/12 122/21	AL [2] 174/17 174/17
151/27 205/13	122/26 128/9 128/18 129/5 132/17 133/22	ALAMEDA [1] 75/20
ACTIVITY [4] 11/12 103/20 104/4 205/17	133/28 134/27 135/12 137/19 138/26 139/5	ALASKA [1] 43/6
ACTUAL [3] 77/4 96/3 204/21	139/6 139/6 143/21 144/6 144/9 149/7	ALCOHOL [1] 29/12
ACTUALLY [43] 14/20 18/12 24/24 33/18	151/19 156/28 157/17 158/15 159/13 160/20	ALESHIRE [1] 1/19
36/10 36/16 48/9 54/18 61/27 65/10 65/13	161/2 161/8 162/6 166/20 175/17 181/28	ALEUTIAN [3] 143/24 157/25 160/2
65/15 66/20 72/7 72/27 75/23 80/19 81/11	188/9 189/14 189/16	ALL [157] 1/14 1/19 4/6 4/9 4/18 4/19 4/22
81/12 84/16 86/3 86/18 87/28 88/6 89/4	AGAINST [6] 16/9 20/4 20/11 20/14 50/11	4/25 5/2 5/28 10/18 12/7 12/28 13/5 15/28
92/25 95/6 95/8 95/13 96/16 97/4 104/2	202/6	21/21 26/22 27/10 30/25 33/6 34/1 34/13
109/9 109/28 110/2 112/27 113/4 115/16	AGE [6] 15/20 18/2 22/14 24/9 29/1 35/24	34/17 37/2 38/22 38/23 40/25 43/5 44/19
137/15 137/17 146/15 165/28 168/15	AGENCY [2] 33/18 167/27	48/15 55/11 59/16 61/12 61/23 61/25 62/8
ADAMS [1] 2/8	AGGREGATED [1] 53/8	64/9 64/11 64/26 65/27 66/22 67/10 67/22
ADAPT [1] 71/21	AGGRESSIVE [2] 170/27 175/14	68/16 68/22 69/18 70/6 72/13 72/17 72/21
ADD [3] 100/9 165/12 190/20	AGO [8] 30/1 54/25 66/18 67/3 76/28 85/20	72/27 73/2 73/20 73/22 75/18 75/20 76/12
ADDITION [2] 144/16 190/18	102/9 162/26	80/25 82/18 83/5 83/19 84/6 87/2 87/14 90/7
ADDITIONAL [23] 2/18 18/13 34/19	AGREE [6] 42/5 117/13 134/22 164/5	90/26 92/10 93/19 94/28 95/6 95/17 95/20
127/11 161/4 162/9 162/22 163/3 176/28	168/17 200/19	98/14 98/18 99/12 99/18 99/26 100/25
177/1 177/9 177/14 177/15 178/2 186/13	AGREED [1] 40/28	100/26 100/27 101/3 101/7 101/8 101/9
186/17 187/18 187/27 198/7 199/1 199/4	AGREEMENT [6] 1/23 34/10 118/12	101/24 102/17 103/3 103/20 104/14 104/22
199/6 200/3	118/14 118/16 163/2	104/24 104/28 105/12 105/13 105/14 108/24
ADDRESS [11] 5/3 5/7 16/4 51/11 52/14	AHEAD [13] 48/12 48/22 49/4 53/3 66/9	112/3 112/20 113/5 113/7 114/10 114/15
52/18 65/8 65/9 65/12 141/1 141/3	67/20 68/20 159/18 177/17 184/12 186/22	116/7 116/14 120/13 120/20 122/12 123/9
ADDS [1] 87/8	195/22 201/7	125/2 125/12 126/3 131/8 131/12 131/15
ADJOURNED [1] 207/24	AICUZ [1] 91/6	135/21 138/4 140/4 140/7 142/13
ADJUST [1] 93/19	AIR [292]	145/18 145/18 145/24 145/28 145/28 146/6
ADJUSTING [1] 92/9	AIRBORNE [1] 84/18	146/7 147/15 150/23 153/8 161/14 162/3
ADJUSTMENT [1] 205/3	AIRCRAFT [146] 12/28 13/14 13/15 13/24	163/5 165/22 166/10 168/22 169/20 169/25
ADMINISTRATION [3] 9/6 10/2 163/13	14/21 14/25 15/1 15/8 15/9 15/13 15/16 16/7	170/24 171/17 179/19 179/21 179/23 179/27
ADMINISTRATIVE [2] 52/14 154/21	16/9 16/16 16/24 16/28 17/2 17/4 17/15	180/9 182/14 182/15 182/27 183/1 186/20
ADMIT [2] 3/21 139/28	17/16 17/17 17/21 18/18 18/23 18/24 19/5	191/13 197/7 201/4 201/9 206/13 206/16
ADOPTED [1] 182/21	20/1 20/2 20/4 20/9 21/10 21/11 21/14 21/23	207/15
ADOPTING [1] 40/11	21/25 21/28 22/1 22/23 23/6 23/8 23/8 23/16	ALL-METAL [1] 43/5
ADVANCED [2] 32/26 35/16	24/2 25/13 25/14 25/15 25/18 25/23 26/20	ALLOW [1] 6/6
ADVANCEMENT [1] 43/11	27/20 27/21 27/24 28/1 28/4 28/9 30/20 31/9	ALLOWED [3] 111/8 161/17 196/6
ADVANTAGE [1] 177/10	31/11 32/2 32/17 33/4 33/15 34/27 35/3	ALLOWS [10] 89/3 91/2 91/23 91/23 92/6
	35/17 36/3 36/6 36/26 40/28 41/15 41/19	92/6 94/4 94/11 100/20 168/5
	41/22 41/28 42/2 42/23 43/22 43/26 44/25	ALMOST [2] 38/6 47/14

A		
ALONE [1] 169/16	145/14 147/14 148/21 156/17 160/23 162/9	203/24 206/18 206/28 207/7
ALONG [4] 55/12 92/23 155/19 205/6	162/11 162/13 163/2 170/3 177/6 184/23	AREA [58] 7/8 13/23 14/4 19/9 25/13 25/27
ALREADY [13] 27/17 84/15 88/7 93/13	184/23 195/26 198/2 198/3 199/21 201/1	26/1 45/4 45/8 46/20 63/25 75/12 75/14 76/6
107/14 108/23 112/6 126/28 149/27 171/22	206/1 206/6 207/19	76/10 76/11 76/19 86/22 89/24 91/6 91/14
171/23 171/26 175/3	ANYBODY [3] 61/23 66/5 199/10	93/15 98/4 98/4 98/20 99/19 100/10 106/21
ALSO [64] 2/18 7/14 12/11 28/10 28/24 29/4	ANYMORE [4] 85/24 85/26 86/12 104/13	117/17 117/21 117/21 118/18 118/23 119/11
29/13 35/10 45/1 46/10 46/26 56/18 62/26	ANYTHING [14] 19/8 42/12 42/18 91/1	119/16 148/3 148/3 148/4 152/13 152/15
66/22 67/8 69/14 76/13 78/9 80/10 80/23	108/11 110/15 111/19 128/11 135/14 136/17	154/20 154/22 155/10 155/12 155/14 155/15
101/15 104/2 108/7 118/9 119/2 120/4 122/9	138/24 139/2 183/7 201/1	155/19 157/27 158/1 158/2 160/23 160/26
125/27 127/16 131/8 138/23 140/4 142/8	ANYWAY [1] 104/26	160/27 161/2 178/27 190/6 190/7 202/10
143/17 143/28 144/8 144/21 145/16 145/16	ANYWAYS [1] 88/15	AREAS [20] 62/25 64/3 77/4 77/7 77/10
145/20 146/14 146/14 152/3 155/8 166/9	ANYWHERE [1] 92/7	77/22 85/8 91/5 91/13 92/9 103/3 103/4
166/25 166/26 167/25 168/24 169/4 170/1	AOL.COM [1] 33/8	105/1 105/2 108/6 111/13 112/2 117/13
171/1 171/4 171/8 173/28 175/14 181/21	APOLLO [1] 104/12	154/19 154/21
187/6 188/2 188/19 191/17 193/5 196/17	APOLOGIZE [4] 10/16 16/22 66/2 68/15	ARGUE [4] 107/9 108/15 127/25 187/13
207/17	APPARENT [1] 30/12	ARGUMENTATIVE [2] 153/2 198/12
ALTERATIONS [1] 3/14	APPARENTLY [2] 66/3 207/17	ARIZONA [2] 181/15 182/6
ALTHOUGH [5] 45/16 111/1 176/3 181/22	APPEAR [3] 117/28 149/15 174/6	ARMED [2] 69/11 70/26
207/1	APPEARANCES [4] 1/13 2/1 1/7 114/7	ARMOR [1] 58/18
ALTITUDE [6] 20/22 63/27 100/11 102/11	APPEARING [1] 32/13	ARMY [19] 13/1 13/20 17/12 22/21 48/5
102/17 102/24	APPEARS [2] 120/28 197/18	49/9 49/10 49/13 49/14 49/23 49/23 49/23
ALTOGETHER [1] 202/4	APPLICATIONS [1] 32/27	57/23 57/24 105/9 119/6 143/26 144/22
ALWAYS [3] 47/19 64/1 138/6	APPLIED [9] 188/26 189/24 190/27 194/4	167/16
AM [15] 6/18 7/22 7/24 7/26 7/28 30/14	196/27 204/16 204/19 204/20 205/3	ARNOLD [12] 13/19 13/21 17/10 17/11
65/12 68/9 71/11 93/9 96/20 121/19 129/21	APPLY [1] 4/16	43/3 67/6 67/7 72/16 72/16 78/19 115/4
144/26 147/1	APPRECIATE [6] 3/22 41/27 55/11 199/26	115/11
AMERICA [2] 1/14 30/2	203/1 207/15	ARNOLD'S [1] 42/10
AMERICA'S [1] 17/1	APPRECIATION [1] 52/20	AROSE [1] 18/10
AMERICAN [20] 7/7 7/23 11/16 20/1 22/7	APPREHENSION [1] 165/5	AROUND [15] 27/5 29/4 63/5 76/8 89/18
22/24 26/3 28/25 30/2 30/21 35/1 38/18 59/5	APPROACH [15] 5/21 11/18 26/18 26/19	91/13 95/4 109/9 113/12 134/10 155/24
59/11 59/17 107/9 107/11 107/15 107/18	26/28 27/4 27/16 48/10 65/19 74/13 88/3	156/22 159/10 169/7 191/24
139/12	120/7 123/5 170/12 193/21	ARRANGE [1] 132/12
AMMO [1] 106/17	APPROPRIATE [6] 3/28 4/1 52/28 111/7	ARRANGED [1] 17/9
AMONG [1] 181/21	126/26 164/25	ARRANGEMENT [2] 26/14 122/11
AMOUNT [6] 26/18 101/20 186/17 191/18	APPROPRIATED [3] 94/5 94/6 151/26	ARRIVE [5] 178/12 178/18 204/5 206/7
191/28 200/16	APPROPRIATION [2] 33/23 188/26	206/24
AMOUNTS [1] 29/17	APPROVED [2] 127/1 148/24	ARRIVED [3] 13/28 170/23 189/5
AMPLE [1] 99/8	APPROXIMATE [3] 15/20 15/22 18/2	ARRIVING [1] 206/4
ANALOGY [1] 182/5	APPROXIMATELY [10] 13/12 35/26	ARROW [1] 117/25
ANALYSIS [3] 8/2 183/3 206/6	57/20 100/17 117/22 159/26 174/23 190/6	ARSENIC [4] 169/6 169/11 169/13 169/13
AND FOR [1] 184/2	202/25 202/27	ARSENIC-FREE [1] 169/13
ANDREW [1] 2/5	APRIL [6] 9/4 162/2 189/23 189/23 197/11	ART [1] 103/6
ANDREWS [1] 2/10	197/18	ARTICLES [1] 9/24
ANGELES [5] 1/2 1/3 114/3 208/2 208/13	AQUEDUCT [1] 168/27	ARTICULATE [1] 205/2
ANGLE [2] 26/18 27/1	AQUIFER [1] 170/4	ARTICULATING [1] 130/24
ANNUAL [1] 171/19	ARC [2] 79/13 98/23	AS [297]
ANOTHER [17] 26/7 35/10 60/27 88/17	ARE [179] 1/16 1/16 2/8 3/16 4/10 6/2 6/16	ASBESTOS [1] 175/13
88/17 118/24 128/14 133/12 135/5 137/28	7/22 14/18 22/8 22/12 25/23 25/25 38/3 38/3	ASCENDER [1] 18/18
138/6 159/27 164/13 171/14 180/4 181/15	38/19 38/28 41/6 41/8 42/26 42/27 43/28	ASIDE [3] 54/26 88/27 106/17
185/25	44/6 44/9 46/2 52/15 53/28 54/9 56/10 56/15	ASK [15] 51/24 53/25 61/13 67/14 69/25
ANSWER [10] 55/16 55/24 125/9 131/22	56/16 59/18 62/23 63/6 67/11 71/20 71/20	124/25 146/8 150/22 164/24 164/28 171/8
132/5 132/15 132/21 135/12 159/18 184/11	71/24 74/19 76/15 76/21 77/4 77/7 77/9	172/26 182/20 189/14 207/11
ANSWERED [3] 38/14 159/17 193/6	79/25 80/27 83/18 83/20 83/27 83/28 84/14	ASKED [20] 34/7 34/9 34/12 34/13 40/25
ANSWERS [4] 50/19 52/27 112/7 186/2	85/18 85/22 87/5 87/6 87/7 88/28 89/1 90/11	41/12 111/19 147/2 147/4 152/22 159/17
ANTECEDENT [1] 72/26	90/20 92/13 93/22 94/2 94/19 96/1 96/4 96/9	172/27 178/24 182/9 182/15 182/15 185/24
ANTELOPE [9] 1/6 1/22 1/2 45/9 114/2	99/25 101/22 103/3 104/17 104/17 104/19	192/28 193/5 197/24
167/26 167/26 171/5 208/6	104/23 106/5 106/7 106/19 106/20 107/6	ASKING [7] 51/13 51/14 88/6 152/18
ANTI [1] 16/7	107/8 107/21 107/24 107/28 108/3 108/4	189/12 196/1 200/16
ANTI-AIRCRAFT [1] 16/7	108/6 108/13 108/16 108/16 108/21 108/21	ASKS [1] 132/22
ANTIAIRCRAFT [1] 50/10	108/28 109/10 110/23 110/28 111/13 111/13	ASPECT [3] 33/1 40/15 46/7
ANTICIPATING [1] 33/27	113/17 114/25 117/15 117/23 119/17 119/20	ASPECTS [1] 163/13
ANTISHIPPING [1] 20/21	119/20 119/26 120/1 121/22 121/24 121/25	ASPHALT [1] 155/5
ANY [80] 1/17 2/15 2/18 3/7 3/20 9/17 10/13	121/26 121/27 122/12 122/14 122/18 122/22	ASSERTED [2] 111/9 111/15
10/15 12/19 18/13 30/5 34/14 43/18 43/21	126/10 126/24 127/25 129/22 129/28 131/6	ASSESS [1] 135/4
43/27 44/11 49/21 49/22 53/6 53/18 54/20	131/7 131/15 133/17 133/19 134/13 134/28	ASSET [3] 84/8 98/27 98/27
54/20 58/14 64/15 66/8 71/27 73/20 81/17	137/26 143/9 143/11 145/7 147/27 149/17	ASSETS [2] 108/22 108/22
82/22 92/12 93/20 96/20 97/22 97/28 102/4	151/12 151/14 151/28 153/14 155/11 155/15	ASSIGNED [7] 58/26 127/11 160/4 176/8
111/10 111/13 112/18 115/19 119/24 121/27	155/22 155/23 156/11 156/27 157/7 157/9	176/9 177/2 178/15
124/21 125/4 127/17 129/2 129/9 130/14	157/11 160/4 160/5 160/11 161/6 161/7	ASSIGNMENT [3] 143/13 143/18 144/23
131/19 132/1 132/15 132/26 133/25 134/18	161/24 162/4 163/5 164/20 164/21 164/21	ASSIGNMENTS [4] 34/26 143/6 143/7
135/9 135/20 138/10 138/14 138/20 144/17	165/7 167/28 168/2 168/21 169/10 174/5	143/12
	174/11 174/18 175/23 176/3 182/3 185/14	ASSIST [1] 148/21
	186/2 193/12 195/28 199/24 200/16 203/24	ASSISTED [1] 149/14

A	76/2 77/28 79/17 81/16 101/4 101/9 101/10 101/26 101/27 102/5 102/11 102/16 103/23 104/2 106/10 127/28 129/2 138/26 142/23 154/27 157/15 159/9 162/2 165/5 168/18 174/4 174/21 179/14 192/10 192/19 193/22 201/10 BACKGROUND [3] 7/4 52/14 69/1 BACKWARDS [2] 72/9 203/4 BACKYARD [1] 93/18 BAD [1] 77/3 BADGERING [1] 51/19 BAKERSFIELD [1] 98/24 BALANCE [3] 71/28 72/1 206/17 BALLISTIC [3] 20/27 29/4 29/5 BALLPARK [1] 134/11 BAR [2] 153/4 153/6 BARBARA [1] 47/28 BARELY [2] 98/25 154/21 BARN [1] 155/19 BASE [249] BASE'S [2] 191/28 202/2 BASED [35] 2/12 10/21 51/24 105/22 108/17 110/9 110/10 134/27 137/24 139/8 139/12 153/22 161/21 162/18 162/20 171/9 177/7 178/1 178/7 178/8 179/25 188/2 188/5 188/17 188/20 189/9 189/18 190/21 190/23 191/14 193/3 200/25 205/4 205/11 206/8 BASELINE [1] 171/20 BASES [19] 49/16 49/24 67/5 67/10 71/13 73/11 78/26 84/11 91/25 92/13 92/15 94/21 99/28 102/27 105/24 107/24 115/9 128/2 181/22 BASIC [12] 79/19 79/20 79/20 80/5 80/18 81/7 81/22 82/3 82/4 82/7 82/19 92/26 BASICALLY [15] 9/16 16/9 20/21 21/2 24/20 30/21 47/19 90/17 94/10 95/1 103/23 146/26 155/11 171/14 171/18 BASICS [1] 20/12 BASING [1] 177/10 BASIS [9] 4/13 112/1 180/1 185/11 187/9 198/17 200/3 201/1 203/11 BATES [32] 6/15 12/2 16/23 16/27 37/16 61/28 62/3 67/13 67/25 74/1 74/4 75/7 84/27 90/15 96/13 98/7 101/14 116/6 141/12 148/9 148/14 148/27 149/7 149/18 149/25 149/26 152/3 154/1 154/13 161/23 162/19 172/8 BATTLE [2] 82/13 82/15 BE [225] BE A [1] 62/27 BEAR [1] 66/4 BEARD [1] 142/9 BEAU [1] 2/5 BECAME [8] 8/19 13/20 14/15 19/24 21/14 24/17 51/5 56/9 BECAUSE [64] 13/13 22/9 25/22 27/4 27/28 28/8 29/25 36/25 38/8 40/18 40/25 42/23 44/23 45/23 46/10 46/13 46/22 46/27 50/6 63/26 69/22 81/23 82/16 84/10 85/7 86/8 88/14 88/25 90/3 90/4 90/7 90/23 91/12 91/15 91/18 92/10 92/24 92/25 93/8 94/11 97/1 97/8 97/19 97/23 99/23 103/3 104/15 106/18 106/28 107/2 108/20 109/8 109/10 122/3 144/22 149/10 149/12 161/17 165/6 179/27 182/14 189/1 196/5 205/21 BECOME [1] 196/9 BECOMES [2] 81/24 81/25 BED [45] 14/3 27/9 44/26 45/23 75/3 75/5 75/18 76/12 76/14 76/16 76/17 84/16 84/25 85/7 85/9 85/16 86/20 86/25 87/2 87/10 87/25 88/1 88/3 88/14 88/19 88/24 90/6 90/8 90/26 95/11 96/5 108/23 126/11 126/13 126/14 126/15 126/24 135/5 148/6 151/7 155/8 156/8 157/1 157/6 157/14	BEDDING [1] 126/16 BEDS [5] 87/5 87/6 87/7 87/15 93/15 BEEN [57] 6/4 11/7 11/8 11/15 14/16 17/14 21/18 24/8 25/13 25/17 28/2 30/21 30/28 32/3 38/17 39/25 47/9 47/15 51/4 51/20 54/21 59/8 63/18 65/28 72/27 81/9 96/16 104/16 106/11 106/24 112/7 124/11 125/21 126/7 145/2 149/27 152/12 157/24 163/20 163/21 163/27 171/6 175/26 177/8 177/11 185/24 185/27 186/3 189/2 193/14 196/16 198/2 199/1 200/26 201/4 202/6 206/22 BEFORE [40] 2/21 5/15 18/1 24/15 33/11 35/24 36/1 49/14 49/23 50/4 53/18 55/2 58/4 64/12 65/3 66/1 89/10 90/20 90/28 104/16 115/8 117/2 121/7 123/15 124/5 140/23 152/12 155/26 159/23 161/15 164/9 172/7 172/12 178/1 179/7 180/8 182/21 193/6 196/27 198/14 BEGAN [6] 8/8 19/24 21/25 29/1 59/5 143/12 BEGIN [9] 6/12 12/2 22/9 71/4 141/11 142/16 143/3 143/3 148/17 BEGINNING [5] 11/3 28/28 39/27 40/6 129/14 BEGINNINGS [1] 16/17 BEGINS [1] 156/20 BEHIND [5] 69/24 77/15 143/20 158/19 158/24 BEING [21] 4/10 4/12 17/16 21/20 30/3 30/16 32/23 39/6 44/5 47/21 48/2 48/6 50/12 66/3 78/28 93/14 94/14 100/28 149/12 153/5 165/4 BELATED [1] 52/24 BELIEVE [42] 2/27 15/22 18/7 18/8 19/19 24/23 33/14 35/23 54/22 62/15 63/8 63/26 89/17 108/11 110/2 116/11 119/5 124/12 133/13 134/14 148/9 162/8 167/17 167/19 169/7 170/19 170/19 172/8 173/6 178/6 186/12 187/26 189/20 189/23 189/28 191/17 192/24 192/27 196/19 197/24 205/27 206/11 BELIEVED [1] 193/7 BELL [5] 20/1 21/9 21/11 21/18 34/28 BELOW [1] 26/14 BELTWAY [1] 75/14 BENEFIT [3] 65/17 69/26 97/18 BENNETT [1] 2/8 BERLIN [2] 143/19 144/23 BEST [11] 1/26 1/26 55/24 62/15 66/2 69/27 107/16 147/21 184/11 189/13 198/9 BETTER [9] 1/21 27/25 84/12 90/14 119/22 156/2 156/3 159/24 186/1 BETWEEN [22] 9/5 13/3 19/23 23/12 24/11 24/13 31/15 32/19 33/13 33/16 34/2 34/6 34/23 37/1 57/13 57/17 70/17 79/13 113/14 115/6 182/6 196/3 BEYOND [5] 45/8 55/25 57/5 109/26 187/24 BIG [5] 28/6 44/5 44/9 129/8 156/11 BIGGER [1] 76/26 BILLET [1] 133/26 BILLION [2] 169/8 169/9 BINDER [1] 68/15 BIO [4] 67/28 72/11 141/21 141/23 BIOGRAPHY [2] 67/28 68/4 BIPLANE [2] 13/7 43/4 BIRTHDAY [1] 207/20 BIT [18] 33/14 67/15 69/26 73/26 75/23 86/15 88/13 92/20 92/22 94/5 96/17 96/19 105/4 112/15 134/26 155/27 161/12 167/4 BITING [1] 80/27 BLACK [6] 19/26 75/20 100/18 100/19 148/1 190/2 BLACKBIRD [1] 56/24 BLAND [1] 39/11
B		
B-1 [9] 15/14 26/9 26/13 28/2 62/3 86/1 89/21 89/26 129/24 B-1 CRASH [1] 62/2 B-10 [1] 15/8 B-2 [10] 9/14 15/14 17/7 23/24 26/8 32/2 32/11 35/13 129/24 156/14 B-52 [10] 36/5 83/24 85/20 85/20 110/25 112/7 128/13 129/21 156/9 166/8 B-52S [2] 156/9 156/10 B-R-E-W-E-R [1] 65/12 BACHELOR [1] 69/2 BACHELOR'S [2] 7/5 142/25 BACK [45] 2/2 2/5 2/23 23/12 24/15 24/15 25/10 31/20 33/18 36/10 46/1 46/2 50/20		

B	BROUGHT [9] 3/3 8/9 40/21 47/7 106/26 109/6 110/4 119/6 201/13 BROWN [1] 1/20 BROWNSTEIN [1] 1/22 BRUNICK [2] 1/24 1/25 BUCKS [1] 89/19 BUDGET [2] 78/27 78/27 BUDGETARY [2] 132/27 139/10 BUILD [5] 80/7 91/14 132/18 136/25 137/1 BUILDING [9] 30/21 75/28 78/16 78/17 122/5 122/8 134/3 146/20 167/8 BUILDINGS [3] 25/25 167/9 167/10 BUILDUP [5] 17/22 19/19 58/11 59/8 60/4 BUILT [11] 20/6 20/7 24/2 29/8 31/15 32/3 38/18 97/3 108/23 128/13 156/14 BUNCH [2] 115/4 115/6 BURGER [1] 167/17 BUSINESS [11] 5/3 52/17 65/8 65/9 65/12 83/16 107/20 108/5 108/18 141/1 141/3 BUY [3] 85/23 168/24 169/3	137/19 139/5 139/20 140/1 146/9 147/18 147/21 147/26 147/27 150/8 151/22 152/2 152/5 152/10 154/25 156/3 156/4 156/10 156/16 157/10 157/12 157/28 160/16 160/22 160/22 165/17 166/4 168/12 168/23 168/24 169/10 169/11 169/12 173/12 173/19 173/27 174/4 174/10 179/4 179/19 180/16 182/9 182/24 184/11 184/11 186/2 186/27 187/16 188/15 193/28 194/27 195/17 196/5 202/24 205/2 206/24 207/3 207/4 207/12 207/12 CAN DATE [1] 42/1 CAN'T [20] 54/5 54/13 54/26 54/26 62/21 80/5 80/6 80/7 81/17 85/23 86/8 87/12 109/8 127/16 127/20 128/11 129/22 130/9 158/2 187/11 CANDIDATE [1] 108/17 CANDIDATES [1] 108/14 CANNOT [4] 25/4 56/5 163/7 207/21 CAPABILITIES [11] 11/13 11/15 28/22 36/28 38/16 43/11 77/21 99/14 105/16 107/8 127/22 CAPABILITY [12] 42/27 79/18 90/8 99/20 100/23 101/7 105/18 112/17 128/19 135/4 135/6 176/22 CAPACITIES [1] 9/11 CAPACITY [13] 8/16 108/13 109/13 109/14 133/12 133/14 133/17 137/9 139/15 176/18 176/18 176/22 187/24 CAPITAL [1] 146/14 CAPTAIN [4] 54/2 54/3 81/11 143/9 CAPTAINS [1] 144/2 CAR [3] 63/28 94/17 160/12 CARE [5] 94/10 94/14 104/3 104/5 126/19 CAREER [6] 8/8 8/24 9/16 143/4 144/5 144/11 CAREFUL [3] 27/4 46/20 128/20 CAREFULLY [1] 17/13 CARGO [1] 78/1 CAROLINA [3] 69/3 69/15 69/16 CARRYING [4] 21/15 32/25 32/25 67/17 CARS [1] 91/19 CASCADE [1] 126/1 CASE [23] 1/6 1/1 1/2 1/15 4/10 4/10 19/7 32/21 39/15 60/2 70/25 114/1 114/2 134/16 147/3 152/27 182/28 184/14 197/28 201/6 207/16 207/18 208/7 CASES [7] 1/6 29/9 30/8 35/2 35/19 54/27 208/6 CATASTROPHE [1] 168/28 CATASTROPHIC [1] 166/18 CATCH [3] 86/5 90/2 91/27 CAUSE [4] 5/15 65/3 140/23 208/16 CELL [3] 57/7 92/28 93/3 CENTER [41] 8/12 8/14 9/7 9/22 11/7 11/14 12/13 19/16 23/13 26/15 48/7 49/8 49/9 49/16 49/20 50/3 56/13 66/27 66/28 67/1 67/3 67/7 72/16 72/27 72/28 78/16 78/20 79/8 84/8 84/9 84/10 101/9 109/3 115/8 115/9 118/6 122/7 157/18 161/2 173/15 176/25 CENTER'S [1] 11/12 CENTERS [1] 62/19 CENTRAL [3] 50/3 67/10 143/19 CENTRALLY [1] 155/18 CENTURY [9] 22/7 22/8 35/4 37/10 37/23 37/26 37/28 38/4 38/10 CERTAIN [5] 41/11 43/22 122/28 122/28 128/23 CERTAINLY [26] 18/26 38/6 41/2 42/6 42/26 43/14 52/15 73/22 74/6 84/3 99/8 103/10 109/19 110/24 120/14 124/10 127/20 127/27 129/11 132/5 164/13 165/19 165/19 187/19 200/28 202/21
	C	
BLAST [1] 29/16 BLENDED [1] 32/16 BLOCK [5] 3/11 45/4 45/4 100/10 109/2 BLOOD [2] 107/12 107/13 BLOW [1] 46/1 BLOWN [1] 46/2 BLUE [4] 98/12 100/10 154/25 161/9 BOARD [2] 26/22 116/13 BODY [1] 32/16 BOEING [4] 32/21 36/5 37/10 144/7 BOLTHOUSE [2] 1/20 30/24 BOMB [10] 20/25 20/26 41/2 55/1 55/6 55/10 77/1 77/17 105/7 106/15 BOMBER [12] 15/9 20/8 20/8 20/13 20/16 23/25 24/16 26/9 76/7 84/2 84/3 84/4 BOMBERS [5] 20/17 22/22 43/6 49/26 77/25 BOMBING [8] 20/23 22/24 39/28 40/3 40/14 40/26 51/4 103/5 BOMBS [8] 40/10 41/5 41/6 41/7 41/7 55/6 55/6 106/14 BONDED [1] 202/21 BOOK [11] 9/19 9/26 9/27 50/22 50/24 50/26 51/2 51/7 51/9 105/16 116/22 BOOKKEEPING [2] 1/24 61/27 BOOKS [1] 10/3 BOOMED [1] 47/9 BOOSTER [1] 30/2 BOOSTERS [2] 30/19 30/20 BORAX [1] 2/14 BORROW [1] 195/24 BORROWING [1] 195/26 BOSS [3] 78/17 115/16 115/17 BOTH [6] 45/4 69/25 103/2 103/3 199/28 206/25 BOULEVARD [2] 5/7 141/4 BOUND [2] 33/17 109/17 BOUNDARIES [2] 92/19 92/20 BOUNDARY [4] 93/6 93/7 93/9 157/26 BOUNDED [1] 98/20 BOX [3] 4/23 98/12 114/11 BRADLEY [1] 1/23 BRAKE [6] 85/23 85/25 85/27 85/28 166/8 166/9 BRAKES [5] 86/2 86/5 86/11 91/27 166/11 BRANCH [1] 157/23 BREAK [10] 60/25 60/27 61/7 104/17 113/11 113/14 113/21 179/8 179/10 179/11 BREAKING [1] 26/21 BREAKTHROUGH [1] 37/3 BREATH [1] 53/2 BREATHING [2] 36/16 36/20 BREWER [14] 3/4 64/25 65/11 65/11 66/14 67/11 73/16 113/18 114/19 123/13 125/1 138/10 158/8 205/17 BREWER'S [6] 68/4 140/3 148/19 149/11 149/17 161/18 BRIEF [5] 4/7 88/27 135/22 135/24 189/4 BRIEFING [3] 148/20 149/11 149/25 BRIEFLY [10] 7/4 7/20 8/6 12/7 22/28 34/22 68/28 72/6 80/11 89/14 BRIGADIER [4] 65/10 66/16 68/3 149/10 BRIGHT [2] 81/18 161/6 BRING [9] 36/14 73/28 73/28 77/28 127/28 136/21 136/22 160/4 165/16 BRINGING [2] 2/20 95/26 BROAD [3] 73/1 125/25 126/9 BROADER [1] 71/15 BROADCAST [3] 51/12 51/28 52/4 BROADLY [2] 31/3 93/6 BROTHERS [1] 43/4	C-17 [1] 78/1 C-17'S [1] 76/24 C.E [2] 119/21 132/9 C.V [2] 5/25 6/28 CABLE [1] 90/3 CALCULATE [4] 176/15 196/1 196/2 203/3 CALCULATED [3] 176/14 181/17 201/15 CALCULATING [1] 204/6 CALCULATION [7] 184/22 185/3 189/22 194/11 200/5 203/6 203/7 CALCULATIONS [5] 181/4 184/17 184/18 194/28 198/18 CALCULATOR [2] 195/19 195/21 CALIBRATE [1] 168/10 CALIBRATED [2] 168/7 168/9 CALIBRATION [1] 57/3 CALIFORNIA [15] 1/1 2/11 2/12 1/3 8/13 12/14 13/12 65/13 75/16 101/19 114/3 141/5 168/13 208/1 208/12 CALL [21] 16/10 31/10 62/2 64/23 64/25 70/11 70/17 86/16 90/22 100/1 100/18 139/24 147/28 155/2 161/20 167/5 167/7 169/5 180/18 188/26 205/5 CALLED [32] 8/13 9/21 9/27 14/10 14/12 16/24 16/28 18/18 19/25 20/22 21/28 22/7 22/8 23/25 28/28 31/11 32/15 32/16 35/9 35/10 35/15 36/17 50/24 63/3 72/23 91/6 94/3 118/15 118/23 181/14 205/17 206/9 CALLS [4] 4/21 55/17 122/22 183/22 CAME [13] 37/2 41/10 41/17 41/17 41/27 81/18 87/22 107/3 179/28 191/24 194/12 196/19 196/22 CAMPUS [1] 155/11 CAN [179] 3/4 3/5 6/13 7/20 8/5 12/3 15/11 17/24 18/12 19/6 22/3 24/22 25/2 25/10 25/23 26/5 27/21 27/22 28/14 28/18 29/19 33/13 34/10 36/14 37/5 42/1 45/5 50/14 50/19 51/24 52/18 54/28 55/24 62/23 62/26 62/27 62/27 67/26 68/28 72/6 73/28 73/28 74/26 75/11 75/17 76/2 76/22 77/8 80/11 80/21 81/2 82/11 82/18 84/7 84/20 84/25 85/3 86/15 86/20 87/25 88/5 88/5 88/12 90/25 90/28 92/6 92/7 92/20 92/21 92/26 93/23 94/4 95/15 95/25 96/4 96/11 97/9 97/13 97/17 98/11 99/24 101/3 101/13 101/24 101/25 101/28 102/1 102/2 102/3 103/13 103/13 103/15 105/5 105/5 105/19 105/20 107/16 110/22 114/10 115/28 117/18 120/13 122/16 127/21 127/21 128/3 128/12 128/18 128/21 128/23 128/24 129/2 129/9 130/11 130/13 130/14 132/8 136/11 136/26	

C		
CERTAINTY [7] 112/21 127/17 128/10 128/11 128/12 129/3 129/9	176/24 189/5 197/3 197/22	COMPRISED [2] 58/16 115/9
CERTIFICATE [1] 208/9	COLONELS [2] 143/10 143/11	COMPRISES [2] 67/5 84/11
CERTIFY [1] 208/13	COLOR [1] 74/6	COMPUTER [2] 31/28 32/5
CHAIN [3] 119/26 120/1 140/11	COLUMN [1] 174/8	CONCENTRATE [1] 146/25
CHALLENGE [2] 82/3 199/27	COLUMNS [1] 174/14	CONCENTRATED [1] 18/21
CHALLENGED [2] 130/11 133/20	COMBAT [7] 16/5 20/4 41/15 77/23 82/20 106/27 112/17	CONCEPT [2] 17/5 155/11
CHALLENGING [3] 26/8 88/23 130/8	COMBAT-WORTHY [1] 41/15	CONCEPTS [1] 185/18
CHANCE [1] 164/15	COMBINED [1] 66/20	CONCERNED [2] 29/2 93/7
CHANGE [16] 3/10 10/24 10/24 40/22 47/16 56/7 56/8 67/2 75/22 99/13 99/14 99/22 135/12 142/5 162/27 162/28	COMBUSTION [1] 36/18	CONCERNING [2] 164/25 206/17
CHANGED [5] 14/11 39/25 47/9 51/4 205/22	COME [25] 3/25 4/1 4/22 12/10 16/7 50/19 64/26 83/25 83/27 83/28 92/20 107/5 110/23 111/21 119/9 119/10 125/8 127/28 132/9 167/22 176/20 180/11 184/4 200/25 207/11	CONCERNS [2] 80/21 113/20
CHANGES [2] 3/7 28/23	COMES [10] 2/23 84/1 128/9 136/18 154/24 156/22 159/9 196/15 204/11 204/26	CONCERT [1] 18/25
CHANGING [1] 83/7	COMING [15] 3/24 19/2 62/25 66/3 81/15 87/19 110/28 114/21 114/23 126/24 129/25 137/11 157/11 165/6 191/19	CONCLUDED [2] 1/24 114/12
CHARACTER [1] 51/3	COMMAND [23] 9/12 69/9 70/3 70/11 70/19 71/2 72/6 72/7 72/8 78/24 84/11 94/23 115/5 115/6 115/13 119/27 120/2 121/15 121/18 122/2 123/2 140/12 144/3	CONCLUSIONS [1] 139/4
CHARGE [2] 146/27 181/11	COMMANDED [1] 73/2	CONCORD [1] 75/24
CHART [15] 5/27 172/27 174/15 174/21 175/17 178/28 193/5 201/11 201/19 201/22 201/27 202/1 202/6 203/19 203/26	COMMANDER [20] 13/19 66/17 67/10 72/12 72/15 72/22 72/27 73/5 73/5 94/23 114/26 115/7 115/15 125/6 127/9 127/10 176/24 176/25 181/14 189/1	CONCRETE [4] 108/23 109/9 109/12 151/6
CHARTED [1] 98/15	COMMANDING [2] 114/28 144/11	CONCUR [1] 194/27
CHARTS [2] 172/28 189/27	COMMENCE [1] 154/1	CONCURRED [2] 184/17 194/20
CHASE [4] 27/20 102/7 102/8 202/24	COMMENDATION [1] 144/21	CONDITION [3] 24/3 68/18 87/10
CHECK [4] 68/26 86/28 157/12 203/27	COMMENT [1] 165/24	CONDITIONS [6] 19/11 27/11 27/12 31/24 38/12 87/2
CHECKED [1] 80/3	COMMENTS [2] 182/28 183/8	CONDUCT [1] 37/1
CHECKING [1] 202/20	COMMERCIAL [6] 13/24 25/15 30/19 44/9 148/3 154/20	CONDUCTED [1] 10/4
CHIEF [5] 8/20 13/20 107/13 131/11 133/7	COMMISSARY [3] 148/5 167/12 167/13	CONDUCTING [2] 20/3 63/13
CHIEF'S [1] 131/8	COMMISSION [2] 142/21 143/1	CONES [2] 93/3 100/22
CHINA [2] 108/28 109/3	COMMISSIONED [2] 142/20 142/26	CONFERENCE [1] 41/23
CHOOSE [1] 181/28	COMMITMENT [1] 107/14	CONFERRED [2] 188/18 188/19
CHRONOLOGY [1] 19/18	COMMITTEE [3] 7/26 33/20 56/6	CONFESS [2] 54/25 57/6
CIRCA [1] 22/15	COMMON [5] 23/28 78/28 79/1 79/11 125/17	CONFIDENT [1] 171/27
CITY [4] 144/23 145/12 166/22 167/20	COMMONLY [3] 21/10 28/28 31/10	CONFIGURATION [1] 32/23
CIVIL [19] 13/24 17/15 32/24 52/20 123/1 142/26 143/4 143/18 143/23 144/7 144/12 144/26 144/27 144/27 173/8 184/24 185/18 186/7 187/15	COMMONPLACE [1] 29/10	CONFINES [5] 74/20 75/15 75/21 90/20 98/17
CIVILIAN [11] 19/9 19/9 22/20 22/28 52/12 54/7 58/21 121/11 121/13 145/2 152/9	COMMUNICATED [1] 189/4	CONFIRM [2] 54/5 54/13
CIVILIANS [2] 58/22 151/25	COMMUNICATING [1] 189/1	CONFUSING [1] 138/27
CLAIM [2] 202/2 202/3	COMMUNITIES [3] 15/3 58/23 63/5	CONGESTED [5] 99/27 108/1 108/2 108/3 108/6
CLARENCE [1] 181/10	COMMUNITY [3] 1/19 148/4 154/22	CONGRESSIONAL [2] 33/21 127/14
CLARIFICATION [1] 3/1	COMPANIES [1] 93/4	CONJUNCTION [1] 2/13
CLASS [1] 92/11	COMPANY [5] 2/6 18/15 18/17 143/6 143/8	CONSERVATION [3] 170/16 171/9 172/1
CLASSIC [2] 31/26 180/6	COMPARABLE [1] 191/6	CONSERVE [1] 164/2
CLASSIFIED [1] 9/15	COMPARE [2] 191/3 202/5	CONSIDER [2] 29/10 163/16
CLAYTON [1] 75/20	COMPARED [2] 181/11 181/16	CONSIDERED [3] 4/14 17/5 144/24
CLEAR [3] 47/8 132/24 145/16	COMPARING [1] 176/1	CONSISTED [1] 16/15
CLEARLY [1] 43/7	COMPASS [3] 28/11 157/5 157/13	CONSISTENT [4] 50/8 50/12 57/27 116/22
CLIENT [1] 116/20	COMPATIBLE [7] 79/9 91/6 91/7 91/9 91/13 92/2 116/3	CONSISTENTLY [1] 63/22
CLIFFORD [1] 1/20	COMPETE [1] 93/3	CONSOLIDATE [1] 128/6
CLIMATE [3] 181/16 182/2 182/3	COMPETITIVE [1] 88/23	CONSOLIDATION [7] 108/9 108/10 108/12 108/14 108/19 127/27 139/11
CLINIC [3] 146/19 146/20 158/25	COMPILATION [1] 151/19	CONSTANCY [2] 11/6 31/22
CLOCK [1] 42/3	COMPILED [1] 172/24	CONSTANT [2] 11/11 11/20
CLOSE [3] 65/15 191/10 191/12	COMPLAINT [1] 93/25	CONSTITUTES [2] 26/3 57/15
CLOSELY [1] 23/16	COMPLETE [3] 83/23 83/24 207/12	CONSTRAINED [3] 43/15 63/4 108/9
CLOSER [2] 67/18 160/17	COMPLETED [2] 85/20 102/11	CONSTRAINTS [3] 45/6 127/28 161/17
CO [1] 2/9	COMPLETELY [3] 50/8 60/5 189/3	CONSTRUCT [1] 133/24
COAST [1] 63/2	COMPLEX [14] 20/6 26/13 44/5 72/20 74/17 100/1 100/3 101/3 118/25 148/7 154/17 154/18 156/20 157/18	CONSTRUCTION [8] 119/17 119/18 119/23 133/26 183/13 188/23 188/24 205/12
COCKPITS [1] 13/7	COMPONENT [2] 148/1 148/2	CONSULTANT [1] 8/1
COINCIDES [1] 17/22	COMPONENTS [3] 72/28 104/22 147/28	CONSUME [1] 170/1
COLD [2] 143/20 144/23	COMPOUND [1] 155/13	CONSUMED [3] 169/19 169/24 175/15
COLEMAN [2] 4/10 180/6	COMPREHENSION [1] 28/13	CONSUMPTION [22] 31/2 124/2 124/13 125/3 166/28 168/16 171/2 171/17 174/2 174/3 176/5 178/25 181/4 182/16 183/26 183/28 188/17 189/19 193/22 194/4 194/15 202/23
COLLEAGUE [1] 52/17	COMPRISE [1] 208/14	CONSUMPTIVE [1] 190/10
COLLECT [1] 105/20		CONTACT [2] 8/9 9/13
COLLECTION [1] 146/2		CONTACTS [1] 181/14
COLLECTIONS [2] 12/10 12/12		CONTAIN [1] 4/11
COLLEGE [8] 69/10 69/11 70/3 70/11 70/19 70/25 71/12 144/3		CONTAINS [3] 5/26 169/12 169/13
COLONEL [8] 13/19 144/6 144/10 144/19		CONTAMINATION [1] 169/6
		CONTENDED [1] 201/3
		CONTEXT [3] 37/6 41/12 84/10
		CONTINENTAL [2] 4/10 180/6
		CONTINGENCIES [1] 145/22

C		
CONTINUE [12] 28/15 32/7 38/19 83/9 83/15 107/22 108/5 108/12 110/24 169/3 182/9 202/22	COUNTY [4] 1/2 1/26 208/2 208/13	203/15
CONTINUED [5] 1/28 2/2 9/15 24/20 29/20	COUPLE [4] 111/23 119/20 167/2 168/12	DATABASE [3] 62/1 162/18 162/25
CONTINUES [1] 24/12	COUPLING [1] 35/10	DATE [10] 6/24 15/22 18/3 18/4 18/5 35/24 36/7 42/1 68/25 142/3
CONTINUING [1] 144/5	COURSE [42] 15/24 16/12 17/22 24/6 26/2 27/15 45/7 54/13 58/2 59/6 69/13 79/24	DATED [1] 208/17
CONTINUUM [2] 81/5 82/8	83/21 87/9 93/5 98/16 126/1 129/28 130/3 143/11 155/1 156/11 158/16 158/17 158/20	DATES [3] 56/11 122/27 123/1
CONTRACTOR [1] 119/24	158/21 159/8 159/11 159/27 160/9 161/1 161/3 166/11 167/24 171/22 173/15 176/8 176/10 182/1 188/23 193/11 194/22	DAUGHTER [1] 94/16
CONTRACTORS [6] 18/11 19/2 52/15 79/25 119/16 151/25	COURT [22] 1/1 3/17 5/15 6/5 6/5 10/18 65/4 66/3 66/15 72/7 103/14 140/24 162/11 163/16 165/17 180/8 197/15 198/10 200/20 200/25 208/1 208/12	DAVIS [5] 2/8 181/13 181/15 181/28 182/1
CONTRACTORS' [2] 119/12 119/13	COURT'S [3] 88/7 162/1 186/23	DAVIS-MONTHAN [4] 181/13 181/15 181/28 182/1
CONTRARY [4] 34/20 187/21 200/9 201/5	COURTCALL [2] 2/4 1/16	DAY [17] 13/14 15/10 15/13 22/1 24/20 24/21 29/11 29/20 35/21 82/9 84/2 86/27 87/1 87/4 94/28 159/1 207/21
CONTRAST [1] 70/23	COURTROOM [2] 1/18 96/28	DAYS [7] 15/4 47/22 95/18 95/21 96/2 113/20 207/11
CONTROL [24] 54/10 77/16 79/22 81/23 82/10 82/17 89/7 89/22 89/23 90/5 95/25 97/3 101/5 101/9 101/27 102/5 104/11 104/12 105/19 113/18 127/10 145/17 146/2 175/14	COVER [3] 95/17 113/6 148/19	DEAD [1] 160/28
CONTROLLED [4] 18/23 18/24 88/1 101/23	COVERED [2] 95/16 113/5	DEAL [7] 22/23 28/6 56/27 165/17 175/16 176/10 185/10
CONTROLS [8] 31/28 35/11 56/28 81/26 82/12 82/13 82/14 104/14	CRAFTSMAN [1] 166/9	DEALING [4] 43/23 43/24 47/4 179/26
CONVENTIONAL [3] 21/19 28/2 28/4	CRASH [5] 46/25 62/2 62/3 62/5 62/9	DEALT [1] 34/14
CONVERSATION [1] 195/2	CRATER [1] 90/7	DEATH [1] 14/13
CONVERSATIONS [1] 183/19	CREATE [2] 151/2 183/14	DEBATING [2] 133/21 199/15
CONVINCED [1] 30/14	CREATED [4] 141/27 142/1 183/16 185/15	DECEMBER [1] 59/6
COOK [1] 49/24	CREATION [2] 63/24 163/12	DECEMBER 7 [1] 59/6
COOKING [1] 167/10	CREDIBILITY [2] 187/20 200/9	DECENT [1] 4/23
COOPERATION [1] 57/13	CREEK [1] 2/9	DECIDE [2] 61/6 200/25
COORDINATE [1] 97/9	CREWS [11] 14/27 14/28 16/7 20/8 20/8 20/15 20/21 50/10 58/18 58/19 58/20	DECIDED [3] 200/14 206/19 206/25
COPY [4] 3/6 48/21 149/27 201/12	CRISSCROSSING [1] 27/10	DECIDING [1] 201/1
CORE [1] 19/13	CRITICAL [3] 77/12 94/12 97/28	DECISION [5] 41/18 106/3 127/13 135/15 207/13
CORPS [11] 13/1 17/12 47/15 48/5 49/10 49/13 49/23 50/4 57/23 57/24 143/26 41/20 42/24 44/11 44/12 49/6 53/10 53/11 54/7 54/10 54/11 54/12 60/13 77/5 77/6 83/3 85/17 86/20 87/22 87/23 95/20 98/21 100/2 100/3 103/21 103/25 103/27 115/14 115/14 117/3 118/10 118/11 121/9 121/10 121/14 127/12 129/20 132/16 138/12 138/13 142/2 151/20 177/22 177/27 183/6 183/14 183/15 183/17 185/15 186/14 190/11 190/12 190/15 190/16 192/26 193/3 195/11 198/10 202/25 202/27 206/11 208/15	CROSS [17] 1/24 2/7 3/2 34/11 34/19 38/24 38/26 53/19 53/22 61/24 113/17 113/19 114/13 114/17 135/20 192/13 200/9	DECISIONS [1] 133/9
CORRECT [65] 11/22 14/8 36/10 40/28 41/20 42/24 44/11 44/12 49/6 53/10 53/11 54/7 54/10 54/11 54/12 60/13 77/5 77/6 83/3 85/17 86/20 87/22 87/23 95/20 98/21 100/2 100/3 103/21 103/25 103/27 115/14 115/14 117/3 118/10 118/11 121/9 121/10 121/14 127/12 129/20 132/16 138/12 138/13 142/2 151/20 177/22 177/27 183/6 183/14 183/15 183/17 185/15 186/14 190/11 190/12 190/15 190/16 192/26 193/3 195/11 198/10 202/25 202/27 206/11 208/15	CROSS-DEFENDANT [1] 1/24	DECLARATION [1] 3/3
CORRECTED [1] 86/19	CROSS-DEFENDANTS [1] 2/7	DECLINING [1] 128/4
CORRECTED FOR [1] 86/19	CROSS-EXAMINATION [10] 34/11 38/26 53/19 53/22 113/17 113/19 114/17 135/20 192/13 200/9	DEEP [1] 73/14
CORRECTION [1] 154/12	CROSS-EXAMINE [3] 34/19 61/24 114/13	DEFEND [1] 50/11
CORRECTLY [5] 39/7 89/6 97/25 99/6 202/21	CROSSES [1] 158/17	DEFENDANT [6] 1/20 1/22 1/24 1/26 2/3 2/14
CORRELATE [1] 30/15	CRR [2] 2/28 208/23	DEFENDANTS [2] 2/5 2/7
CORRESPONDENCE [1] 18/7	CRUCIAL [3] 30/21 35/12 35/13	DEFENSE [12] 8/2 54/10 64/6 70/26 120/5 120/27 121/3 121/8 127/5 129/27 131/7 171/16
CORRIDOR [5] 100/11 100/19 100/20 102/12 102/24	CRYSTAL [1] 2/5	DEFENSE'S [1] 121/20
COST [3] 89/14 134/8 169/15	CSR [4] 2/28 1/5 114/5 208/23	DEFENSIVE [1] 20/11
COUGHING [2] 4/28 85/1	CURATOR [1] 8/8	DEFER [1] 52/17
COULD [64] 13/15 13/16 13/17 21/22 26/9 30/14 32/3 32/8 36/26 37/7 41/3 45/24 48/16 51/26 66/14 74/9 75/23 79/12 81/18 82/14 87/6 91/10 102/14 109/18 109/20 109/21 109/22 109/26 109/28 110/4 110/6 113/16 135/5 136/4 136/6 136/17 136/19 137/2 137/27 138/1 153/3 155/25 155/26 156/1 158/14 160/15 162/5 164/24 165/27 168/27 169/2 173/9 173/21 174/14 176/28 177/14 180/14 186/12 195/21 195/25 196/11 199/4 199/6 207/10	CURRENT [18] 66/15 70/4 77/18 114/25 133/27 134/1 134/2 134/6 147/7 147/18 183/28 188/6 191/15 195/10 195/13 196/27 198/4 200/2	DEFINE [2] 57/15 125/27
COULDN'T [4] 2/14 85/27 109/11 205/19	CURRENTLY [5] 7/28 10/1 72/12 134/4 193/12	DEFINED [1] 117/12
COUNSEL [9] 1/17 49/2 52/27 55/20 149/9 149/9 150/2 150/11 164/7	CURRICULUM [1] 88/24	DEFINITELY [2] 55/10 160/12
COUNTERINTELLIGENCE [2] 8/23 8/26	CURSORY [1] 122/24	DEFINITION [3] 10/26 57/15 97/19
	CURTAIN [1] 143/20	DEFINITIVE [1] 127/2
	CURTISS [1] 18/16	DEFLECTED [1] 29/16
	CURVES [2] 202/20 202/21	DEGREE [6] 47/6 69/2 93/20 127/17 129/3 129/9
	CUSTODIANS [1] 38/19	DELAY [1] 86/18
	CUSTOMER [1] 23/7	DELIVER [3] 77/20 77/27 80/7
	CUT [2] 3/15 202/24	DELUGE [1] 166/16
	CUTTING [1] 15/15	DEMAND [20] 176/14 187/27 187/27 188/5 188/5 189/17 191/15 193/16 194/16 194/18 195/9 195/10 195/13 195/15 196/27 197/27 198/4 198/4 198/7 198/10
	CYCLE [3] 83/23 83/25 188/26	DEMANDED [1] 13/14
	CYCLES [1] 188/25	DEMANDING [1] 99/26
		DEMANDS [8] 99/23 112/22 164/3 177/7 177/25 184/3 188/14 190/27
	D	DEMOLISHING [1] 175/12
	D.C. [5] 8/3 70/27 75/12 75/13 75/14	DEMOLITION [3] 175/11 175/15 188/24
	D.F.R.C [1] 118/3	DEMONSTRATED [2] 36/19 38/9
	DAILY [2] 45/18 190/22	DEMONSTRATIONS [1] 57/4
	DAMAGE [4] 82/13 82/15 89/4 89/11	DEMONSTRATIVE [3] 3/25 4/2 150/26
	DANVILLE [1] 75/20	DEMONSTRATOR [1] 32/22
	DATA [18] 2/13 100/27 101/6 101/6 103/12 105/4 105/10 105/20 148/25 172/28 181/12 183/21 188/20 190/23 193/1 193/1 193/3	DENY [1] 59/1
		DEPARTMENT [15] 1/3 1/14 2/12 1/4 54/9 114/4 120/5 120/27 121/3 121/8 145/17 155/18 167/15 171/16 208/3

D		
DEPENDENT [1] 26/2	68/11 82/3 85/19 85/28 90/1 90/10 91/28	DIVERSE [1] 145/8
DEPENDING [3] 27/11 87/9 176/8	99/7 99/17 103/18 104/26 106/23 110/15	DIVIDE [2] 50/15 77/22
DEPENDS [2] 89/15 133/23	116/9 116/14 125/16 135/3 142/17 142/21	DIVIDED [2] 78/27 117/13
DEPICT [1] 161/9	142/23 142/28 143/3 143/5 148/21 152/20	DIVISION [1] 1/15
DEPICTED [2] 74/21 100/17	152/25 162/28 166/8 171/21 176/13 178/12	DIVISIONS [1] 98/15
DEPICTING [1] 157/17	178/18 180/7 180/9 181/6 181/19 181/28	DO [205] 2/25 4/23 5/14 5/18 9/17 9/19
DEPICTS [2] 154/24 158/16	182/27 183/1 183/7 183/14 183/18 183/19	10/24 11/2 11/18 17/9 30/5 35/3 38/24 39/17
DEPLOY [2] 14/22 14/26	184/3 184/10 184/14 188/28 190/20 192/27	39/21 44/18 54/20 55/8 55/17 56/15 57/6
DEPLOYED [3] 22/22 27/17 31/16	194/7 194/14 196/26 199/7 201/27 202/15	58/7 60/12 60/19 60/22 62/24 63/9 64/6 65/2
DEPLOYING [1] 185/28	203/14 204/5 206/1 206/6	65/6 66/1 69/22 69/23 71/20 72/17 73/3
DEPLOYMENT [1] 19/16	DIDN'T [20] 2/11 2/12 3/25 15/26 42/23	73/10 73/13 74/6 75/12 75/16 76/6 78/9
DEPLOYMENTS [3] 11/10 47/24 186/4	48/4 68/17 90/2 97/25 97/25 97/26 106/26	78/22 78/23 78/23 78/25 79/2 79/20 79/21
DEPOSED [1] 163/3	109/10 111/25 163/2 174/5 187/11 192/25	79/22 79/24 79/25 80/5 80/18 80/28 81/22
DEPOSITION [40] 2/3 2/8 2/18 2/19 30/25	192/25 203/15	81/24 82/2 82/10 83/8 84/17 85/19 86/7 86/8
34/1 34/8 39/17 40/13 40/26 41/9 48/11	DIFFERENCE [2] 115/5 196/2	86/12 87/11 88/11 88/24 89/3 89/4 89/14
50/27 51/1 51/18 51/20 55/20 111/8 111/20	DIFFERENT [14] 2/20 49/15 60/5 79/7	90/26 91/2 92/19 92/25 93/23 94/4 94/18
119/16 120/23 129/14 131/17 132/21 149/4	81/20 82/11 99/4 104/20 121/15 122/11	94/18 95/11 96/1 96/4 96/11 96/12 96/15
149/5 149/17 152/22 161/14 161/27 162/9	131/18 158/9 170/12 193/21	97/18 99/3 99/28 100/4 100/7 100/15 100/28
162/13 162/21 163/1 163/6 174/26 194/2	DIFFERENTLY [1] 82/16	101/1 101/11 101/28 102/1 102/2 102/14
196/17 201/13 206/9	DIFFICULT [8] 69/16 81/24 81/25 82/2	102/16 102/16 103/18 104/4 105/24 106/13
DEPTH [1] 88/15	88/14 92/22 128/23 133/8	107/19 107/22 108/20 109/14 112/18 113/18
DEPUTY [2] 2/13 181/13	DIFFICULTY [3] 25/4 26/9 106/20	115/28 116/23 117/9 117/11 119/1 119/17
DEREK [1] 2/8	DIGITAL [1] 56/28	119/22 119/23 120/8 120/24 123/27 125/15
DERIVED [1] 174/9	DILIGENT [1] 203/1	125/18 126/22 127/6 127/8 128/18 128/23
DESCENT [1] 16/14	DIORIO [22] 178/19 178/20 178/21 178/24	129/1 129/26 130/2 130/23 130/27 131/2
DESCRIBE [19] 3/18 7/20 8/6 10/24 12/6	180/4 180/21 180/26 181/10 182/10 182/15	131/6 131/19 132/26 132/28 133/3 133/6
39/16 59/21 62/17 68/28 74/9 75/11 80/11	183/16 183/20 184/14 187/7 187/9 188/19	133/10 133/13 133/14 134/18 135/8 135/15
84/7 90/17 91/10 98/11 147/18 175/19 176/4	194/14 194/15 194/26 195/1 196/3 205/7	136/23 137/2 137/8 139/3 139/15 140/22
DESCRIBED [4] 37/19 59/26 119/16	DIORIO'S [2] 190/24 194/20	140/26 141/18 141/19 145/6 145/25 149/1
152/17	DIRE [3] 10/13 73/20 147/14	153/22 157/7 159/25 159/25 163/2 163/19
DESERT [10] 77/10 106/25 170/24 170/28	DIRECT [9] 3/2 6/10 66/12 77/1 101/26	164/1 165/3 166/9 166/23 166/23 167/5
171/6 181/15 182/2 182/2 182/6 182/7	112/28 114/12 123/23 141/9	167/6 167/12 167/13 168/10 169/26 170/3
DESIGN [4] 18/17 18/19 32/16 104/9	DIRECTION [10] 3/9 71/6 71/20 86/8 90/28	172/4 173/11 174/22 176/10 179/7 179/12
DESIGNATED [5] 49/9 50/2 57/6 118/18	155/21 157/12 172/25 193/21 197/23	180/4 183/25 183/25 183/25 184/7 184/10
152/14	DIRECTIONAL [1] 89/22	184/10 184/13 184/24 186/15 187/11 191/22
DESIGNATION [1] 152/14	DIRECTIONS [1] 171/15	194/10 195/17 195/18 198/14 198/22 201/10
DESIGNED [5] 17/1 21/18 30/2 32/3 85/27	DIRECTLY [4] 9/1 9/18 148/23 168/4	203/5 206/6 207/12 208/13
DESIGNERS [1] 17/2	DIRECTOR [6] 8/22 8/25 142/5 144/27	DO CROSS-EXAMINATION [1] 38/24
DESIGNS [1] 17/17	144/27 145/11	DO YOU [1] 78/9
DESK [1] 92/28	DISAGREE [1] 39/26	DOCTOR [2] 53/15 60/11
DESPITE [1] 110/2	DISAPPEARS [1] 46/4	DOCTORATE [1] 7/10
DETAIL [7] 58/24 62/17 129/17 156/7	DISAPPOINTED [1] 206/22	DOCUMENT [34] 2/20 6/17 67/26 68/7
167/4 182/11 184/15	DISASTER [1] 28/5	116/26 116/28 123/14 123/15 123/20 124/4
DETAILS [1] 2/15	DISCIPLINED [1] 33/9	124/6 124/7 124/21 124/23 130/14 130/20
DETERIORATING [2] 15/24 16/3	DISCOVER [1] 81/8	131/19 131/24 131/26 134/18 134/19 141/18
DETERMINE [9] 53/6 105/5 105/6 149/26	DISCOVERY [5] 149/19 161/22 162/12	141/20 141/27 148/14 149/4 149/8 149/15
164/22 168/5 185/24 187/16 193/2	162/18 162/24	149/24 150/16 150/20 162/13 196/24 197/2
DETERMINED [3] 14/1 35/2 200/27	DISCRETE [2] 117/13 125/28	DOCUMENTATION [2] 3/8 162/9
DETERMINES [3] 44/15 44/16 79/21	DISCRETIONARY [1] 133/5	DOCUMENTATIONS [1] 131/15
DEVELOP [12] 29/5 40/16 42/27 72/20 79/3	DISCUSS [4] 7/4 126/27 178/2 201/11	DOCUMENTS [27] 3/3 43/9 53/6 131/1
79/10 81/8 106/24 107/2 107/8 107/19	DISCUSSED [9] 4/16 80/14 85/8 110/11	131/5 131/12 131/14 132/6 132/10 132/15
197/26	115/8 134/27 137/11 139/9 140/2	132/18 138/11 138/14 138/20 138/24 149/18
DEVELOPED [7] 18/17 21/20 38/7 41/25	DISCUSSING [5] 13/9 34/4 34/23 112/14	161/24 161/25 161/25 162/3 162/11 162/14
79/4 83/27 107/2	112/16	162/22 162/23 194/9 196/18 197/1
DEVELOPING [4] 71/23 81/14 82/6 134/7	DISCUSSION [4] 33/28 54/6 80/23 112/18	DOES [54] 6/21 6/23 12/26 22/5 31/8 52/5
DEVELOPMENT [28] 9/25 11/10 12/17	DISCUSSIONS [1] 134/15	61/28 63/16 68/22 68/24 70/2 70/2 71/12
23/15 29/2 34/27 35/12 35/13 37/9 39/23	DISK [1] 3/5	75/26 78/21 78/22 78/22 82/18 87/24 88/6
49/28 54/16 67/6 70/16 78/20 79/1 79/13	DISPOSAL [1] 145/14	89/5 89/11 93/10 93/27 94/27 96/23 100/8
79/18 80/6 80/6 82/19 81/5 95/1 136/20	DISPUTE [5] 3/21 163/11 164/21 207/1	103/5 103/9 103/10 117/21 117/28 125/1
136/22 136/23 137/22 139/1	207/2	125/9 125/11 125/26 126/13 128/10 131/14
DEVELOPMENTAL [10] 23/4 23/20 24/6	DISSERTATION [1] 7/12	149/2 152/4 158/12 159/1 166/12 167/22
35/6 67/9 72/26 73/2 79/28 79/28 138/1	DISTANCE [6] 27/2 31/17 62/18 62/21	168/19 178/14 187/3 191/3 196/9 196/23
DEVOTED [1] 57/7	98/24 159/26	197/19 197/20 201/16
DIABLO [1] 75/20	DISTANCES [1] 31/18	DOESN'T [16] 46/10 46/13 47/16 84/24
DIALOGUE [1] 2/16	DISTINGUISH [1] 23/3	92/14 94/26 98/14 98/25 104/12 124/21
DIAMOND [1] 2/5	DISTINGUISHED [5] 69/6 69/7 69/9 69/10	132/1 135/12 137/6 162/27 162/28 163/11
DICTATES [1] 59/12	144/1	DOING [38] 2/15 45/17 46/28 47/17 47/18
DID [89] 6/19 6/20 7/6 22/23 33/16 36/9	DISTRESS [2] 25/14 25/18	47/22 47/23 47/24 49/27 49/28 56/23 56/26
40/2 40/13 40/16 40/19 41/3 42/6 43/14 44/4	DISTRIBUTED [1] 159/6	56/26 63/6 71/11 78/5 81/14 82/11 83/15
44/6 49/6 49/20 51/6 51/14 51/22 52/2 52/3	DISTRIBUTION [3] 158/27 170/17 171/23	83/18 91/24 93/17 97/19 104/15 104/16
52/19 53/5 54/2 54/3 56/18 59/3 66/2 68/10	DISTRICT [1] 1/27	114/20 126/25 129/23 129/27 138/24 138/25
	DIVERGE [1] 25/23	163/16 164/2 169/15 183/5 189/22 198/27
	DIVERGENCE [2] 28/1 28/9	205/19

D	DROPPING [4] 76/23 76/23 77/16 128/16 DRY [28] 13/11 13/25 14/10 14/11 15/18 17/8 17/9 21/23 25/12 25/16 27/9 39/11 40/9 40/26 42/20 44/24 45/10 45/24 45/26 48/6 60/18 75/3 75/17 76/12 76/14 87/8 118/17 118/26 DRYDEN [5] 9/7 9/22 12/13 118/5 157/18 DUBOIS [5] 1/16 64/24 66/9 111/17 114/12 DUCKS [1] 113/16 DUE [2] 164/8 178/5 DUNN [1] 1/26 DURING [21] 4/17 26/19 30/11 38/9 58/14 82/21 82/24 82/25 106/25 120/23 143/19 143/28 144/23 161/13 163/1 168/22 175/13 193/24 194/2 196/16 207/21 DUST [1] 175/14 DUTY [3] 151/24 152/9 160/10 DYING [1] 160/28 DYNAMIC [4] 43/2 43/2 177/21 178/5 DYNAMICS [1] 86/24	EKE [1] 88/16 ELABORATE [1] 33/13 ELECTRICAL [4] 69/4 151/9 168/15 168/16 ELECTRICITY [1] 146/2 ELECTRONIC [3] 2/9 35/11 56/28 ELEMENT [5] 36/14 78/25 84/11 90/14 126/4 ELHANEY [1] 1/24 ELIGIBLE [1] 108/25 ELITE [1] 20/16 ELLSWORTH [1] 28/3 ELONGATE [1] 147/23 ELSE [7] 61/23 90/24 96/28 122/9 141/28 180/7 183/7 EMERGE [1] 49/19 EMERGENCY [8] 25/16 27/16 62/6 62/7 87/7 87/27 145/19 145/20 EMINENTLY [1] 13/25 EMOTION [1] 207/18 EMPLOYED [1] 151/15 EMPLOYEES [3] 142/6 148/24 152/8 ENABLED [1] 44/25 ENABLES [1] 44/18 ENCAMPMENT [2] 14/2 14/2 ENCOMPASSED [1] 31/4 ENCOMPASSES [2] 40/23 75/18 ENCOUNTER [1] 205/26 ENCROACH [2] 63/22 63/27 ENCROACHMENT [19] 63/16 63/20 92/16 92/17 92/18 92/21 92/24 92/27 93/1 93/4 93/6 93/7 93/9 93/10 93/13 94/20 94/26 95/8 110/12 END [16] 28/10 58/4 64/12 72/3 72/3 77/2 80/3 91/4 105/3 105/3 106/19 118/26 143/23 155/23 157/24 165/16 ENDANGER [1] 25/25 ENDANGERING [1] 19/8 ENDED [1] 59/6 ENDORSE [2] 116/14 116/15 ENDS [8] 71/23 71/23 71/25 95/1 99/4 112/15 112/16 200/1 ENEMY [2] 20/4 20/12 ENGAGEMENT [1] 94/24 ENGINE [18] 21/5 29/2 29/22 29/25 30/15 36/20 47/5 56/18 56/20 56/23 56/28 57/2 57/8 84/17 84/18 84/19 84/22 89/11 ENGINEER [11] 123/2 143/23 144/7 144/26 178/22 184/24 185/18 186/8 187/16 193/8 193/12 ENGINEERING [15] 67/6 69/4 72/16 78/20 142/26 143/4 143/18 144/12 144/27 145/10 154/20 156/15 173/8 206/1 206/10 ENGINEERS [1] 143/27 ENGINES [7] 26/14 29/13 29/21 30/16 30/18 72/18 72/19 ENJOY [1] 207/20 ENLARGE [3] 12/3 173/21 190/8 ENLARGEMENT [1] 173/9 ENLISTED [1] 13/28 ENOUGH [6] 2/5 19/5 65/15 66/4 90/24 96/1 ENSURE [4] 71/25 78/27 79/1 99/5 ENSURING [4] 126/18 126/19 126/19 126/20 ENTER [5] 28/28 38/3 38/4 164/25 207/3 ENTERED [6] 24/6 37/10 37/23 37/25 37/26 37/28 ENTERPRISE [1] 69/14 ENTERTAIN [1] 165/20 ENTIRE [10] 26/1 47/15 75/14 85/25 93/2 101/19 106/26 109/15 157/16 174/4 ENTITIES [2] 23/11 92/18
DOLLARS [1] 89/20 DOMESTIC [4] 166/19 166/21 167/5 167/7 DON'T [104] 3/20 10/28 13/8 34/7 42/11 45/13 45/15 45/16 46/6 46/25 46/27 47/21 51/9 51/16 52/13 52/13 54/12 56/17 57/5 58/9 59/20 60/21 60/24 61/4 61/19 63/8 64/28 67/16 71/28 72/1 78/11 79/5 79/10 80/28 85/25 86/12 86/24 90/6 91/11 91/12 91/14 91/15 91/16 91/19 92/7 92/8 92/9 104/24 107/12 107/18 108/11 111/18 115/13 115/20 116/8 116/11 116/23 117/15 121/13 122/26 124/6 124/6 124/8 124/25 129/26 130/28 131/13 131/18 132/18 132/20 135/16 138/10 138/14 138/20 153/23 156/17 160/12 160/23 163/25 164/20 165/6 165/8 165/15 171/12 173/1 180/1 183/1 183/2 186/24 188/8 188/9 189/27 193/25 195/18 195/23 196/6 197/1 198/15 199/18 199/24 200/20 205/9 205/27 207/2 DONALD [1] 8/19 DONE [24] 2/18 47/19 50/12 54/15 54/15 54/16 56/20 56/27 60/12 60/26 60/27 78/7 82/7 94/1 99/19 101/16 104/16 111/1 112/28 113/4 137/25 146/21 187/7 193/20 DORM [1] 94/16 DORMS [1] 160/11 DORSAL [1] 89/8 DOT [2] 90/22 90/23 DOUBLE [2] 68/26 203/27 DOUBLE-CHECK [2] 68/26 203/27 DOUBLY [1] 97/10 DOUBT [4] 83/10 83/14 128/27 129/7 DOWN [38] 25/20 26/21 62/25 69/25 85/16 87/19 87/22 88/12 88/16 88/18 89/6 89/7 99/11 101/5 109/6 111/3 113/17 126/3 126/11 126/13 126/14 126/15 126/16 126/24 130/1 135/5 136/16 136/19 139/20 146/8 153/6 155/15 155/21 155/23 168/14 171/2 175/26 196/23 DOWNLOADABLE [1] 131/9 DOWNSIDE [1] 93/20 DOWNSIDES [1] 93/23 DOWNSIZED [1] 142/6 DOWNTOWN [1] 133/26 DR [4] 5/24 6/27 13/8 64/13 DR [14] 4/21 6/13 10/7 16/26 18/1 37/12 38/28 53/24 55/24 59/3 62/14 64/7 166/28 173/6 DR. HALLION [12] 6/13 10/7 16/26 18/1 37/12 38/28 53/24 55/24 59/3 62/14 64/7 166/28 DR. NISHIKAWA [1] 173/6 DR. RICHARD [1] 4/21 DRAFT [3] 2/19 3/10 59/16 DRAFTS [2] 2/10 3/4 DRAMATIC [1] 101/21 DRAW [2] 43/28 182/5 DRAWN [2] 37/24 156/23 DRAWS [1] 108/9 DRHYPERSONIC [1] 33/8 DRINK [1] 179/11 DRINKING [1] 169/7 DRIVE [9] 75/28 76/1 76/6 76/8 91/22 109/9 152/26 168/14 171/1 DRIVEN [1] 175/26 DRIVING [1] 156/20 DRONE [4] 18/22 31/10 31/21 40/23 DRONES [3] 44/4 44/5 44/9 DROP [7] 30/13 30/13 40/10 54/12 54/28 102/18 169/9 DROPPED [4] 76/28 103/16 106/14 106/25	E E-A-R-L [1] 141/3 E-MAIL [8] 33/7 197/3 197/10 197/18 197/21 197/26 198/14 198/23 E-MAILS [1] 197/6 EACH [1] 99/5 EAGLE [1] 119/5 EAGLES [1] 73/9 EARL [3] 3/5 141/2 141/24 EARLIER [15] 32/2 78/4 80/9 80/23 84/15 85/8 88/2 134/27 138/18 144/8 154/17 160/1 161/26 166/8 194/27 EARLY [17] 10/4 11/3 12/27 13/1 17/15 17/17 17/19 18/20 22/6 31/21 43/5 57/19 61/22 79/13 83/18 106/22 191/5 EARS [1] 67/19 EARTHQUAKE [3] 129/8 145/22 168/27 EASIER [6] 70/5 97/15 97/16 98/7 163/20 195/20 EASIEST [1] 72/9 EASILY [1] 50/14 EAST [8] 14/1 15/19 29/7 60/17 60/18 76/15 167/26 167/26 EASY [2] 27/24 207/16 EBB [5] 83/6 83/8 83/10 83/14 205/25 EBBS [2] 86/23 205/17 ECONOMIC [3] 152/14 152/21 152/27 EDGE [3] 15/16 155/4 155/4 EDISON [1] 168/13 EDITOR [1] 10/2 EDUCATED [1] 139/18 EDUCATION [6] 70/10 70/24 105/23 142/17 144/1 185/20 EDUCATIONAL [2] 7/3 69/1 EDWARDS [233] EDWARDS' [1] 42/4 EDWIN [1] 2/19 EFFECT [2] 92/3 92/5 EFFECTIVE [2] 72/4 89/9 EFFECTIVELY [1] 13/16 EFFICIENT [3] 78/28 165/10 169/14 EFFORT [8] 9/5 35/15 108/10 136/28 137/1 137/3 137/4 138/1 EFFORTS [1] 207/15 EGLIN [19] 49/26 67/8 72/24 78/19 79/5 91/3 93/7 94/23 94/26 95/2 100/7 106/10 107/26 115/10 115/25 115/26 116/1 135/3 137/10 EICHHORN [1] 176/26 EITHER [8] 42/24 46/3 96/11 118/14 128/17 149/17 162/15 163/12 EJECT [2] 89/24 90/3	

E		
ENTITLED [1] 208/16	EXAMPLE [35] 11/17 13/3 14/23 17/17	EXPEDIENCY [1] 202/9
ENTRY [3] 57/4 160/25 160/26	22/6 26/7 28/27 29/26 34/28 44/4 50/9 56/22	EXPEDITIOUS [1] 64/5
ENVIRONMENT [12] 1/14 15/1 36/26	63/23 71/18 76/23 76/24 77/28 79/2 79/13	EXPERIENCE [15] 6/22 8/4 8/6 8/7 8/28
71/19 71/21 92/13 106/7 108/9 108/19 128/4	89/21 93/14 103/13 103/16 106/10 117/16	10/21 68/23 105/22 181/13 187/16 188/3
182/6 182/7	119/4 126/16 127/23 131/10 132/9 132/12	188/4 190/23 190/24 206/8
ENVIRONMENTAL [1] 143/14	146/17 167/7 167/8 205/23	EXPERIENCES [2] 72/6 72/8
ENVISION [1] 44/4	EXCEED [1] 21/15	EXPERIMENTAL [4] 18/17 40/20 44/25
ENVISIONED [1] 43/13	EXCEL [1] 201/28	47/1
EQUATES [1] 124/17	EXCELLENCE [1] 7/27	EXPERIMENTS [1] 44/7
EQUIPMENT [2] 16/8 77/27	EXCELLENT [1] 68/28	EXPERT [10] 4/13 10/7 31/1 73/17 147/10
EQUIVALENCY [3] 178/2 178/16 187/25	EXCEPT [1] 166/22	162/14 180/7 184/3 184/21 187/10
EQUIVALENT [28] 15/14 75/16 109/20	EXCEPTIONALLY [2] 73/13 108/24	EXPERT'S [1] 4/13
126/7 135/6 136/4 136/5 136/11 136/12	EXCERPT [5] 123/13 123/19 124/5 149/10	EXPERTISE [4] 46/5 152/13 152/16 202/10
136/15 136/16 137/4 137/12 137/14 137/15	173/14	EXPLAIN [7] 25/2 50/18 51/13 88/7 97/14
137/20 138/1 138/21 145/11 167/14 177/1	EXCESSIVE [1] 99/8	136/4 136/11
177/15 178/9 184/6 186/13 186/18 191/19	EXCHANGE [4] 151/27 151/28 167/14	EXPLAINED [2] 87/15 196/16
199/5	167/17	EXPLANATION [1] 49/8
ERA [4] 13/7 21/3 21/13 63/25	EXCLUSIVE [4] 97/18 188/7 188/12 189/17	EXPLODE [1] 17/27
ESQ [16] 1/15 1/16 1/18 1/19 1/21 1/23 1/23	EXCLUSIVELY [1] 40/1	EXPLODED [2] 47/13 47/13
1/25 1/26 1/27 2/3 2/5 2/8 2/8 2/15 2/19	EXCUSE [9] 16/26 48/16 83/12 85/1 117/12	EXPLOITED [1] 38/7
ESSENCE [3] 67/4 67/9 90/27	120/27 150/4 162/5 174/25	EXPLORE [2] 33/12 167/4
ESSENTIALLY [2] 44/7 163/17	EXCUSED [2] 64/11 139/22	EXPLORED [2] 11/15 32/23
ESTABLISH [8] 3/20 14/2 41/19 60/3	EXECUTE [7] 70/14 71/26 72/2 99/12	EXPLORING [1] 50/10
124/23 131/26 138/15 183/20	123/3 125/22 145/25	EXPLOSIVE [1] 145/13
ESTABLISHED [4] 20/6 29/6 33/20 177/11	EXECUTING [2] 66/25 146/16	EXPRESS [1] 167/18
ESTABLISHING [1] 186/5	EXECUTIVE [8] 7/15 8/18 8/18 124/10	EXPRESSION [3] 44/2 136/11 158/11
ESTABLISHMENT [2] 28/26 36/27	143/25 171/10 171/12 171/13	EXTEND [2] 25/4 26/10
ESTIMATE [25] 30/5 176/13 178/4 178/6	EXEMPLARY [1] 3/16	EXTENDED [2] 26/16 195/2
178/12 178/18 178/24 180/4 180/8 184/4	EXEMPLIFIES [2] 17/7 21/11	EXTENSIVE [2] 73/10 166/16
184/26 184/27 187/7 187/10 187/17 188/2	EXEMPLIFY [1] 164/26	EXTENSIVELY [1] 42/9
188/12 188/13 188/15 190/9 194/6 194/20	EXERCISE [2] 15/3 161/7	EXTENT [3] 47/8 50/20 108/3
195/3 199/7 203/11	EXERCISES [1] 16/11	EXTRAORDINARILY [2] 27/19 44/24
ESTIMATED [3] 181/4 187/4 194/15	EXERCISING [2] 161/6 161/7	EXTREMELY [2] 44/23 45/11
ESTIMATING [1] 185/27	EXHAUST [2] 29/17 81/15	EYES [1] 104/18
ET [2] 174/17 174/17	EXHIBIT [71] 5/26 5/27 6/12 6/16 6/27	
EUROPE [2] 16/14 73/9	11/21 11/22 11/25 37/15 37/16 37/18 37/22	F
EVALUATE [1] 182/16	61/28 64/20 68/2 74/1 74/3 74/23 75/8 84/26	F-1 [3] 29/22 30/9 30/16
EVALUATED [4] 13/15 17/16 20/27 188/20	85/11 90/15 96/13 98/7 116/5 116/15 116/18	F-100 [1] 22/11
EVALUATING [3] 19/25 19/28 20/2	117/5 120/8 120/16 120/22 120/25 121/2	F-101 [1] 22/11
EVALUATION [3] 11/10 122/7 183/2	123/5 123/18 123/24 124/28 140/5 140/19	F-102 [1] 22/11
EVAPORATES [1] 46/4	141/12 141/23 148/8 148/9 148/13 148/17	F-104 [2] 22/11 160/25
EVEN [24] 23/10 31/17 58/23 58/24 71/15	148/18 148/26 149/2 150/26 153/2 153/5	F-111 [2] 27/20 55/5
74/18 90/16 91/15 93/23 95/28 98/25 99/1	153/25 154/3 172/3 172/4 172/7 172/8	F-111'S [1] 73/9
99/22 105/15 109/8 112/13 113/14 115/15	172/20 179/5 180/18 180/20 180/24 192/17	F-15 [2] 57/1 134/6
122/1 122/1 127/10 129/25 139/15 160/12	194/2 197/5 197/9 197/17 201/21 202/6	F-15'S [2] 73/6 102/8
EVENT [3] 18/28 199/8 207/19	203/25 203/26	F-15E [1] 73/9
EVENTUALLY [4] 15/4 71/3 83/24 110/26	EXHIBIT 125 [2] 11/21 11/22	F-15E'S [1] 134/6
EVER [4] 54/21 59/26 100/15 198/2	EXHIBIT 167 [1] 153/25	F-15S [1] 177/4
EVERY [4] 82/9 86/27 87/1 205/25	EXHIBIT 178 [4] 172/3 172/8 192/17 202/6	F-16 [15] 25/3 25/19 35/12 54/22 87/17 89/5
EVERYBODY [2] 61/13 186/2	EXHIBIT 187 [2] 179/5 180/18	89/16 89/17 89/21 89/22 90/1 99/9 102/8
EVERYONE [1] 104/11	EXHIBIT 194 [4] 74/1 74/3 90/15 98/7	125/28 134/5
EVERYONE'S [1] 22/16	EXHIBIT 196 [2] 148/9 148/26	F-16'S [1] 73/6
EVERYTHING [8] 50/18 58/27 66/23 66/23	EXHIBIT 2 [1] 123/5	F-16S [3] 155/15 177/3 177/4
79/19 103/11 108/20 126/22	EXHIBIT 221 [2] 116/5 140/5	F-22 [5] 82/6 84/1 84/1 134/6 155/12
EVICTING [1] 115/19	EXHIBIT 243 [1] 84/26	F-22'S [1] 99/10
EVIDENCE [19] 3/10 3/25 34/20 48/5	EXHIBIT 253 [1] 96/13	F-22S [1] 156/27
111/10 139/3 139/6 150/21 152/12 163/4	EXHIBIT 260 [1] 37/15	F-35 [13] 15/14 63/3 79/12 84/1 99/17 99/19
164/16 180/11 182/23 187/21 196/10 199/21	EXHIBIT 3 [1] 197/17	99/19 103/15 107/27 110/25 126/17 134/7
200/10 200/26 201/5	EXHIBITS [18] 1/28 2/19 4/2 4/9 5/21 5/25	134/8
EVOLUTION [4] 11/7 41/21 43/7 50/5	6/6 22/2 37/22 64/14 64/14 64/15 65/22	F-35'S [1] 99/10
EVOLVED [3] 14/12 44/3 49/18	67/12 140/1 150/9 165/4 201/12	F.A.A [1] 122/6
EXACT [3] 127/19 171/12 204/11	EXIST [7] 42/24 85/26 92/15 107/9 131/6	F.Y.07 [1] 171/20
EXACTLY [7] 103/1 104/1 113/2 127/20	131/12 207/3	FACILITIES [34] 28/23 56/9 56/9 57/13
180/2 184/23 190/7	EXISTED [1] 24/14	63/12 64/2 72/18 73/15 94/7 94/10 97/3
EXAGGERATION [1] 95/19	EXISTING [1] 138/11	109/4 117/23 132/12 143/17 145/28 146/7
EXAMINATION [21] 2/15 6/10 34/11	EXISTS [1] 101/7	147/10 147/11 147/19 153/28 154/5 155/20
38/24 38/26 53/19 53/22 62/12 66/12 113/17	EXOTIC [2] 29/10 29/11	155/22 158/10 159/25 161/8 161/10 166/14
113/19 114/12 114/17 135/20 136/1 138/8	EXPAND [2] 16/4 175/17	167/5 167/11 184/21 184/21 188/3
141/9 163/27 164/6 192/13 200/9	EXPANDED [1] 15/5	FACILITY [15] 14/7 23/2 24/7 29/24 52/12
EXAMINE [3] 34/19 61/24 114/13	EXPANSION [4] 16/16 59/10 59/11 132/14	52/21 56/19 57/7 72/21 74/17 151/11 157/15
EXAMINING [1] 164/14	EXPECT [4] 83/8 113/13 137/27 206/16	157/16 159/27 161/3
	EXPECTATION [1] 62/24	FACT [21] 3/4 3/21 15/7 46/7 50/2 76/25
	EXPECTS [1] 199/11	77/14 85/19 93/23 95/17 105/15 108/17

F		
FACT... [9] 108/27 109/1 127/25 130/1 160/23 162/18 162/28 166/23 179/26	135/10 136/24 137/16 138/15 155/13 177/1 177/2 177/10 177/11 178/3 178/10 178/16 178/25 180/5 181/5 182/1 184/5 185/3 185/25 186/13 186/17 187/5 187/18 187/25 188/7 188/13 189/2 189/2 189/17 191/19 194/16 194/19 196/4 198/7 199/5	40/22 41/14 43/6 43/7 43/11 48/7 49/8 49/9 49/16 49/20 50/3 54/22 56/27 57/3 57/4 58/19 62/6 62/6 63/14 63/14 63/28 66/25 66/27 72/8 73/5 79/21 81/26 82/10 82/11 82/12 82/14 82/17 91/23 95/23 100/1 118/5 154/18 166/16
FACTOR [11] 46/21 188/27 189/5 190/14 190/17 190/27 190/28 191/14 194/5 194/11 204/17	FIGHTERS [6] 20/12 22/8 35/7 77/25 155/23 155/24	FLIGHTS [2] 126/3 161/7
FACTORS [2] 26/2 46/16	FIGHTING [1] 63/22	FLORIDA [6] 5/7 49/27 67/9 69/5 93/8 106/12
FACTS [7] 150/17 162/27 163/12 164/20 179/27 206/21 207/4	FIGURE [8] 152/10 153/5 157/4 174/1 174/9 178/1 189/16 203/10	FLOW [10] 83/6 83/8 83/10 83/15 119/9 123/2 205/25 206/18 206/22 207/5
FACTUAL [3] 149/5 207/1 207/2	FIGURED [1] 9/28	FLOWN [7] 18/24 24/4 31/16 41/28 96/15 96/17 98/2
FAILING [1] 85/26	FIGURES [7] 57/19 149/15 153/21 173/12 173/28 183/26 191/4	FLOWS [4] 86/23 170/5 205/17 206/27
FAIR [3] 39/24 59/21 96/17	FILE [1] 3/5	FLUCTUATING [1] 147/6
FAIRLY [5] 6/1 50/17 153/23 169/7 202/7	FILL [4] 83/23 83/24 86/3 146/5	FLY [18] 14/5 20/10 40/10 43/4 78/12 78/12 82/4 82/18 86/27 87/4 95/25 96/26 96/27 100/12 101/3 101/24 104/7 128/14
FAIRNESS [2] 2/23 165/13	FILLS [1] 86/26	FLYING [27] 14/18 16/25 17/1 17/2 18/27 19/10 20/11 20/11 22/20 32/10 32/11 32/13 38/11 40/21 40/23 55/4 73/6 73/8 81/11 89/13 96/16 99/1 99/2 99/16 102/8 104/24 128/14
FAIRWAYS [1] 159/12	FILM [1] 25/19	FOCUS [3] 70/18 71/1 202/9
FALLS [1] 47/20	FILTER [1] 169/11	FOCUSED [1] 70/24
FAMILIAR [22] 6/16 53/28 68/7 94/19 94/22 94/24 117/1 119/13 119/25 119/26 120/1 120/4 121/17 121/28 122/18 122/22 122/24 126/10 145/9 151/14 157/8 176/3	FILTERS [1] 169/16	FOERSTER [1] 2/14
FAMILIARITY [2] 124/21 132/26	FINAL [1] 3/11	FOLDER [3] 116/7 116/9 116/13
FAMILY [6] 117/17 117/21 151/28 160/5 160/7 160/9	FINALLY [1] 17/7	FOLKS [9] 75/26 77/28 104/23 106/11 106/22 108/27 132/10 133/21 198/3
FAMINE [1] 188/25	FIND [11] 11/5 11/8 19/12 47/22 50/9 58/15 109/10 109/11 116/9 164/16 164/24	FOLLOW [2] 53/25 122/14
FANTASTIC [1] 19/9	FINDS [1] 10/18	FOLLOW-UP [1] 53/25
FAR [11] 24/15 24/15 31/24 60/9 132/7 137/26 156/8 156/18 202/15 203/5 206/22	FINE [6] 39/1 53/27 96/11 111/28 113/15 179/24	FOLLOWED [1] 20/3
FARBER [1] 1/22	FINISH [2] 102/5 176/12	FOLLOWING [4] 14/13 42/26 56/7 207/8
FARMING [1] 2/6	FINISHED [2] 8/24 144/10	FOND [1] 33/5
FARMS [1] 2/6	FINS [1] 89/8	FOOLISH [1] 47/26
FARSEEING [1] 13/19	FIRE [10] 29/13 86/6 91/27 145/16 145/17 145/18 145/19 145/19 155/18 166/15	FOOT [3] 57/17 88/17 88/18
FARTHER [1] 130/11	FIRED [1] 54/21	FOOTAGE [1] 125/8
FASCINATING [1] 39/2	FIREFIGHTERS [1] 166/10	FORBID [1] 145/23
FASHION [1] 164/17	FIRES [1] 166/18	FORCE [248]
FAST [2] 69/23 82/5	FIRING [2] 54/17 54/19	FORCE-NASA [1] 57/1
FAST-FORWARD [1] 82/5	FIRINGS [2] 60/19 60/22	FORCED [1] 94/18
FASTER [1] 130/10	FIRM [1] 19/5	FORCES [16] 9/13 13/20 22/21 49/14 49/24 50/4 59/17 69/11 70/26 71/20 107/27 107/28 107/28 128/1 137/11 137/13
FAVORABLY [3] 168/17 181/16 191/6	FIRST [40] 5/25 6/15 9/3 12/7 12/26 12/27 14/11 14/12 18/21 20/1 20/25 20/26 20/28 21/14 21/27 22/24 23/26 24/4 31/21 32/9 38/9 41/14 43/25 44/6 56/2 75/28 76/28 77/22 85/3 90/27 99/1 103/16 143/12 148/18 148/18 149/20 153/4 165/7 179/22 179/26	FORECAST [3] 132/13 134/23 137/8
FEAST [1] 188/25	FISCALLY [1] 108/8	FORECASTED [1] 178/8
FEATURE [2] 100/9 100/15	FISHING [1] 157/28	FOREGOING [1] 208/14
FEATURES [1] 19/3	FIT [1] 75/14	FORESEEABLE [2] 188/6 192/1
FEBRUARY [6] 1/12 1/3 114/3 207/25 208/16 208/17	FITS [2] 37/4 81/2	FORESIGHT [3] 106/23 107/1 135/2
FED [3] 82/7 157/27 158/3	FITTING [1] 106/21	FORM [4] 92/24 92/26 93/1 180/12
FEDERAL [9] 7/14 7/15 53/7 121/12 164/22 171/15 200/27 206/17 206/26	FIVE [19] 36/21 95/7 112/12 127/22 131/2 131/20 135/16 147/28 189/8 189/20 189/26 193/26 194/3 194/8 195/16 203/4 203/7 203/12 207/14	FORMAL [1] 142/16
FEED [1] 158/25	FIVE-YEAR [5] 131/2 189/8 194/8 203/4 203/12	FORMAT [1] 2/10
FEEDING [4] 94/14 104/3 104/5 126/19	FIX [1] 27/23	FORMATION [2] 20/11 99/16
FEEDS [2] 80/27 81/5	FIXED [1] 13/7	FORMATIONS [1] 20/17
FEEL [2] 161/12 171/27	FIXED LANDING [1] 13/7	FORMATS [1] 193/1
FEELING [2] 27/22 42/28	FIXING [1] 104/8	FORMER [1] 146/20
FEET [31] 77/3 151/6 151/8 151/11 151/12 151/12 154/28 155/1 155/3 155/4 155/6 155/6 155/7 155/17 155/28 156/10 173/17 173/18 174/2 174/3 175/22 178/7 186/19 187/28 191/14 191/24 192/2 193/17 194/13 194/23 194/24	FLAG [3] 16/10 16/11 71/4	FORMERLY [1] 66/19
FELLOW [3] 7/23 7/24 7/25	FLAMING [1] 27/26	FORT [1] 70/27
FEW [12] 17/25 53/25 82/5 85/20 89/12 89/19 89/20 96/4 109/1 110/23 173/20 196/18	FLAT [3] 27/3 27/6 148/2	FORTH [4] 23/12 46/2 46/2 77/9
FIELD [32] 7/6 7/12 13/18 14/23 14/24 14/25 21/24 22/20 22/22 28/2 41/26 41/26 42/6 43/1 49/11 49/17 49/24 49/25 49/26 49/27 70/14 79/19 80/4 80/8 108/1 137/14 143/7 143/9 143/22 144/4 160/21 161/10	FLEET [1] 18/23	FORWARD [7] 4/22 16/18 64/27 79/23 81/6 82/5 202/10
FIELDED [2] 80/1 80/2	FLEW [5] 14/25 47/25 82/27 102/7 102/9	FOUND [4] 11/14 39/4 48/4 201/12
FIFE [2] 1/23 2/5	FLEX [3] 102/5 102/11 102/16	FOUNDATION [8] 124/6 124/23 177/8 180/14 180/16 186/24 186/25 187/20
FIGHT [3] 77/27 77/28 77/28	FLEXIBILITY [2] 94/6 94/11	FOUNDATIONAL [2] 183/4 200/2
FIGHTER [51] 12/28 22/23 22/23 22/25 22/25 25/3 35/16 100/14 127/4 127/11 133/12 133/27 134/1 134/12 134/20 134/24	FLIES [2] 82/15 96/28	FOUNDING [1] 11/7
	FLIGHT [80] 8/12 9/7 9/21 9/22 9/26 10/3 12/13 19/15 19/25 21/6 21/12 21/15 21/22 21/25 21/27 23/4 23/5 23/13 23/14 23/15 23/20 23/26 24/4 24/6 24/7 24/19 32/3 32/11 32/12 33/1 35/6 35/11 36/6 36/20 36/23 36/27 37/1 37/3 37/5 38/10 40/18 40/20	FOUR [11] 22/6 35/27 35/27 64/14 76/28 86/16 106/16 147/27 193/26 194/3 195/15
		FOUR MILES [1] 106/16
		FRAME [7] 71/22 105/28 106/1 137/28 173/16 175/10 175/13
		FRANCHISES [2] 167/15 167/16
		FRANCISCO [4] 14/24 75/17 75/18 75/19

F	GERMANY [1] 20/14 GET [62] 2/5 2/28 17/27 28/13 32/1 46/1 50/19 53/18 55/25 66/1 66/4 67/17 70/15 70/21 70/28 71/27 75/1 76/8 77/8 77/27 78/26 88/15 88/23 90/26 90/28 98/25 99/4 99/19 101/25 103/12 103/18 103/20 104/28 105/4 105/7 105/9 107/21 111/8 111/16 123/2 125/7 131/9 134/20 134/24 135/10 156/3 156/4 157/28 163/18 165/14 165/26 170/18 177/9 179/11 179/14 179/19 193/28 194/7 200/3 203/1 205/9 207/4 GETS [6] 63/7 63/8 76/1 78/27 127/11 145/14 GETTING [5] 17/26 89/9 100/27 128/20 152/23 GIANT [1] 84/25 GIVE [32] 2/14 5/15 8/6 12/21 16/23 52/27 55/16 60/27 63/23 65/3 65/14 74/28 75/24 89/18 98/19 98/22 103/13 115/28 139/5 140/23 140/28 158/8 162/6 163/12 163/24 164/13 164/27 184/2 191/26 194/14 194/21 195/9 GIVEN [13] 43/8 43/10 43/18 43/21 43/27 44/11 94/3 94/14 97/22 125/21 126/7 163/21 200/11 GIVES [8] 45/8 75/2 94/6 101/18 131/20 153/4 168/24 195/13 GLANCING [1] 173/2 GLEN [1] 14/14 GLOBAL [10] 31/9 38/5 77/23 77/26 78/3 78/6 78/9 131/10 136/27 155/22 GO [84] 2/5 6/1 12/16 17/28 18/1 20/16 23/8 23/9 31/7 46/6 48/12 48/22 49/4 50/13 53/3 66/9 67/19 68/19 69/17 70/6 70/14 71/3 84/17 85/7 86/27 86/28 87/5 87/8 88/17 88/21 89/25 90/28 91/3 91/25 91/26 96/25 99/3 99/24 101/13 102/4 102/14 104/2 104/13 105/17 107/6 107/16 113/13 119/10 121/17 122/27 129/15 130/1 130/4 131/9 134/9 140/1 142/17 150/20 153/8 153/25 155/24 157/15 157/22 159/18 163/22 164/4 165/28 173/19 173/25 174/4 174/21 175/5 175/20 177/17 179/4 179/22 182/22 184/12 186/22 188/25 195/22 198/14 201/7 202/15 GOAL [2] 171/21 171/24 GOALS [2] 125/7 125/8 GOD [4] 5/17 65/5 140/25 145/23 GOES [12] 33/18 66/23 80/4 87/1 118/20 118/28 119/23 138/26 156/21 158/23 159/8 168/6 GOING [124] 1/14 3/21 3/23 5/24 12/16 12/21 31/4 34/17 36/4 38/23 39/10 40/19 50/7 50/16 50/18 51/23 52/6 59/1 60/8 60/26 61/16 61/18 67/14 70/7 71/11 72/4 78/26 84/2 85/19 86/5 86/6 86/10 86/13 89/17 89/22 90/4 90/4 90/27 91/25 91/26 94/15 94/16 97/20 97/21 97/23 104/17 106/2 106/5 106/8 106/18 107/7 107/20 107/25 108/5 108/7 108/12 108/16 108/18 109/17 112/1 112/25 113/11 114/13 124/9 126/15 127/4 127/20 128/22 128/24 128/25 129/21 129/21 129/23 129/27 130/2 130/4 130/5 130/7 130/10 130/10 130/20 131/28 134/20 134/24 135/10 135/14 135/15 136/21 136/22 136/25 136/26 137/2 137/3 137/21 138/11 138/15 138/21 146/8 149/3 152/11 160/5 164/9 164/13 164/22 172/18 174/27 175/1 175/23 177/6 177/9 177/12 177/16 179/20 179/22 185/5 187/13 192/9 192/19 199/5 199/22 201/18 202/22 206/14 207/3 GOLDEN [1] 2/9 GOLF [7] 158/16 158/17 158/20 158/21 159/8 159/11 159/27	GONE [2] 28/16 42/9 GOOD [23] 1/10 1/20 1/23 38/19 38/28 39/1 40/27 53/24 66/4 85/17 88/15 95/28 96/1 108/16 114/19 156/3 171/2 171/5 171/28 171/28 192/15 192/16 193/10 GOT [19] 2/19 26/9 61/6 67/22 82/3 84/21 86/17 87/12 107/26 109/26 112/27 131/26 137/18 139/17 140/9 161/20 163/1 191/14 193/19 GOTTEN [1] 25/3 GOVERNMENT [5] 7/18 9/20 53/7 142/6 171/15 GOVERNMENT'S [1] 1/15 GRADE [6] 143/6 143/7 143/8 143/9 143/22 144/4 GRADUATE [10] 69/7 69/8 69/9 69/10 69/16 142/18 142/24 143/16 144/2 144/3 GRADUATED [8] 7/16 7/17 69/3 69/14 81/10 142/18 142/19 142/25 GRADUATED WITH [1] 142/25 GRANTS [1] 3/27 GRAPH [1] 203/24 GRAPHICALLY [1] 3/18 GRASS [3] 160/23 160/28 170/24 GRAVITY [2] 106/14 158/25 GRAY [1] 119/5 GREAT [16] 21/4 22/23 31/26 56/26 56/27 81/20 85/1 85/2 90/9 91/22 95/18 96/3 101/15 106/3 175/16 176/10 GREATER [3] 13/14 139/14 139/14 GREEN [4] 87/7 98/12 98/20 156/17 GREENS [1] 159/12 GRESHAM [1] 2/7 GRID [1] 90/19 GROSS [1] 86/4 GROUND [13] 57/2 72/17 72/21 74/19 103/26 157/27 158/4 159/3 159/4 167/24 168/24 169/1 169/2 GROUNDWATER [5] 1/6 1/22 1/2 114/2 208/6 GROUP [9] 2/8 22/25 22/25 107/27 137/14 137/14 142/5 144/12 181/14 GROWN [1] 11/13 GROWS [1] 84/2 GROWTH [11] 59/17 91/13 92/6 105/25 108/17 110/9 110/10 111/8 111/13 137/14 137/15 GUARANTEE [1] 92/12 GUESS [15] 66/1 66/18 70/5 76/27 96/9 106/11 110/6 117/19 117/20 118/6 163/24 164/19 188/28 199/20 199/23 GUIDANCE [2] 131/7 131/7 GUIDED [6] 76/28 77/1 103/17 105/7 107/2 107/3 GULF [1] 63/2 GUN [1] 50/10 GUNNERY [6] 39/28 40/3 40/14 51/4 58/18 103/5 GUY [2] 39/17 139/26 GUYS [1] 79/24 GYMNASIUM [2] 160/21 160/26
G	H	
G.P.S [2] 77/1 105/7 GABRIELS [1] 46/17 GALLON [2] 158/24 167/2 GALLONS [3] 30/8 30/10 159/1 GANDY [4] 176/25 189/5 197/4 197/22 GAS [2] 146/1 151/10 GATE [1] 94/17 GATHER [1] 101/3 GAVE [9] 19/10 30/25 34/1 34/14 184/25 185/6 194/26 195/19 196/3 GEAR [9] 13/7 25/5 26/10 26/11 26/16 27/23 87/22 89/25 89/25 GENERAL [51] 2/12 2/13 11/16 64/25 65/10 66/8 66/14 66/16 67/11 68/3 69/21 71/4 71/17 73/16 74/9 74/10 80/28 104/13 111/24 112/28 113/18 114/19 115/4 115/6 116/26 120/22 123/13 124/4 125/1 127/7 127/21 127/22 127/26 128/19 129/14 130/9 135/18 135/21 136/3 136/10 138/10 140/3 143/11 148/19 149/10 155/7 158/8 160/11 166/7 176/26 199/9 GENERAL'S [4] 111/7 114/11 131/25 145/15 GENERALIZED [1] 3/19 GENERALLY [8] 73/18 107/12 116/28 119/26 120/1 122/14 126/26 132/20 GENERATE [5] 37/3 103/19 103/27 104/6 201/28 GENERATION [1] 103/28 GENTLY [3] 88/12 88/18 89/6 GEOGRAPHICAL [1] 45/6 GEOGRAPHICALLY [2] 3/26 23/11	H-A-L-L-I-O-N [1] 5/6 HABITATION [1] 64/3 HAD [125] 1/24 2/16 3/13 9/24 13/18 16/12 17/9 17/14 18/16 18/21 18/22 19/4 19/7 19/9 19/23 20/5 20/15 20/19 20/24 21/18 21/26 21/27 23/5 24/7 24/18 25/14 26/8 26/17 27/1 27/12 28/2 28/4 28/5 28/23 29/14 29/15 30/11 31/21 35/7 35/14 35/17 36/27 36/27 36/28 37/21 38/9 40/7 41/18 41/28 43/3 44/24 44/26 45/3 45/3 45/20 46/7 47/15	

H		
HAD... [68] 49/16 50/4 50/6 50/9 51/4 55/6 56/10 56/20 56/25 58/21 58/22 58/23 58/24 59/14 62/14 79/6 82/13 82/22 82/25 83/19 85/24 87/21 88/1 89/24 89/28 93/16 93/16 99/18 103/2 103/19 103/21 103/27 106/28 109/9 119/4 119/16 121/7 127/9 133/11 134/15 136/20 138/23 143/5 143/11 143/17 145/1 160/1 161/16 162/12 164/14 170/24 170/24 170/24 171/23 175/10 175/13 175/14 179/21 181/12 181/12 181/17 185/20 192/28 192/28 193/5 194/3 195/1 206/20	HADN'T [1] 152/12	HADN'T [1] 152/12
HALF [4] 66/19 67/3 158/28 179/9	HALFWAY [1] 76/1	HALFWAY [1] 76/1
HALLION [18] 3/3 4/21 5/5 5/24 6/13 10/7 13/8 16/26 18/1 37/12 38/28 52/26 53/24 55/24 59/3 62/14 64/7 166/28	HALLION'S [2] 5/24 6/28	HALLION'S [2] 5/24 6/28
HALLION, [1] 64/13	HALLION, I [1] 64/13	HALLION, I [1] 64/13
HAMILTON [1] 14/24	HAND [6] 5/13 36/28 50/13 50/13 65/1 80/27	HAND [6] 5/13 36/28 50/13 50/13 65/1 80/27
HANDED [1] 116/27	HANDLE [2] 169/10 177/14	HANDLE [2] 169/10 177/14
HANDS [1] 22/28	HANDY [1] 84/24	HANDY [1] 84/24
HANGAR [3] 155/16 156/13 156/13	HANGARS [6] 20/7 103/24 151/12 155/22 166/17 167/11	HANGARS [6] 20/7 103/24 151/12 155/22 166/17 167/11
HAP [5] 13/19 17/10 17/11 42/9 43/3	HAPPEN [9] 86/6 106/2 127/20 135/1 145/25 177/16 199/11 199/15 199/17	HAPPEN [9] 86/6 106/2 127/20 135/1 145/25 177/16 199/11 199/15 199/17
HAPPENED [2] 21/2 83/4	HAPPENING [3] 47/10 129/8 130/26	HAPPENING [3] 47/10 129/8 130/26
HAPPENS [1] 82/8	HAPPY [5] 2/22 4/26 5/1 66/7 201/13	HAPPY [5] 2/22 4/26 5/1 66/7 201/13
HARD [5] 45/11 45/21 45/24 91/22 206/24	HARVARD [1] 7/18	HARVARD [1] 7/18
HAS [74] 11/6 11/13 11/14 11/14 11/15 14/16 17/24 17/25 19/4 24/19 25/13 25/17 26/13 29/20 30/21 38/8 38/17 39/25 39/25 43/6 47/8 47/9 51/20 52/17 54/15 54/21 63/18 63/20 63/21 65/22 78/18 80/2 82/6 82/22 82/22 84/18 93/21 94/1 101/6 107/14 114/12 116/5 120/11 122/7 124/20 125/25 127/23 131/11 142/5 142/5 147/6 149/13 149/25 152/16 155/13 162/25 168/13 171/11 175/26 176/10 177/11 180/9 182/26 187/4 187/21 195/5 195/6 199/1 199/9 199/21 200/26 201/4 205/22 206/23	HASN'T [2] 124/5 181/23	HASN'T [2] 124/5 181/23
HAVE [387]	HAVE [387]	HAVE [387]
HAVEN'T [7] 104/16 129/25 162/14 163/4 174/19 193/14 196/16	HAVING [12] 16/1 27/25 42/9 42/9 62/21 65/17 73/2 95/25 104/6 164/16 165/2 171/4	HAVING [12] 16/1 27/25 42/9 42/9 62/21 65/17 73/2 95/25 104/6 164/16 165/2 171/4
HAWK [5] 31/9 75/20 78/6 78/9 155/22	HAZARD [1] 91/5	HAZARD [1] 91/5
HAZARDOUS [3] 63/14 63/14 91/24	HAZARDS [1] 68/19	HAZARDS [1] 68/19
HE [76] 2/11 2/11 2/14 3/18 10/17 10/19 13/21 13/22 13/27 17/3 17/9 17/12 30/25 34/1 34/4 34/13 34/14 43/6 43/7 51/22 51/22 51/24 51/25 52/24 65/22 78/18 89/9 89/11 102/20 111/25 115/7 124/21 131/25 131/28 132/22 138/18 147/15 149/13 149/14 152/13 152/16 152/25 158/11 161/21 162/25 163/3 174/26 174/28 177/13 178/22 178/28 180/3 181/3 181/23 181/24 181/24 181/25 182/21 182/27 183/1 183/7 184/10 184/10 184/11	HE [76] 2/11 2/11 2/14 3/18 10/17 10/19 13/21 13/22 13/27 17/3 17/9 17/12 30/25 34/1 34/4 34/13 34/14 43/6 43/7 51/22 51/22 51/24 51/25 52/24 65/22 78/18 89/9 89/11 102/20 111/25 115/7 124/21 131/25 131/28 132/22 138/18 147/15 149/13 149/14 152/13 152/16 152/25 158/11 161/21 162/25 163/3 174/26 174/28 177/13 178/22 178/28 180/3 181/3 181/23 181/24 181/24 181/25 182/21 182/27 183/1 183/7 184/10 184/10 184/11	HE [76] 2/11 2/11 2/14 3/18 10/17 10/19 13/21 13/22 13/27 17/3 17/9 17/12 30/25 34/1 34/4 34/13 34/14 43/6 43/7 51/22 51/22 51/24 51/25 52/24 65/22 78/18 89/9 89/11 102/20 111/25 115/7 124/21 131/25 131/28 132/22 138/18 147/15 149/13 149/14 152/13 152/16 152/25 158/11 161/21 162/25 163/3 174/26 174/28 177/13 178/22 178/28 180/3 181/3 181/23 181/24 181/24 181/25 182/21 182/27 183/1 183/7 184/10 184/10 184/11
HE'D [1] 189/2	HE'S [11] 30/28 43/5 115/16 115/16 131/24 131/26 152/26 152/26 182/21 187/12 198/27	HE'S [11] 30/28 43/5 115/16 115/16 131/24 131/26 152/26 152/26 182/21 187/12 198/27
HEAD [1] 195/17	HEADINGS [1] 28/14	HEADINGS [1] 28/14
HEADQUARTER'S [1] 67/4	HEADQUARTERED [1] 22/24	HEADQUARTERED [1] 22/24
HEADQUARTERS [5] 78/17 143/25 143/26 144/8 146/20	HEALING [1] 86/25	HEALING [1] 86/25
HEAR [6] 15/26 55/15 136/6 180/14 183/3 186/2	HEARD [23] 1/17 2/7 3/16 17/10 18/6 40/3 54/4 80/9 80/23 81/1 95/18 111/23 113/8 158/8 163/10 165/2 170/4 171/8 176/2 183/9 200/18 200/24 201/5	HEARD [23] 1/17 2/7 3/16 17/10 18/6 40/3 54/4 80/9 80/23 81/1 95/18 111/23 113/8 158/8 163/10 165/2 170/4 171/8 176/2 183/9 200/18 200/24 201/5
HEARING [4] 16/1 165/7 183/2 206/16	HEARSAY [7] 4/11 4/11 4/12 170/6 170/8 181/21 183/22	HEARSAY [7] 4/11 4/11 4/12 170/6 170/8 181/21 183/22
HEART [1] 122/17	HEAVILY [1] 93/7	HEAVILY [1] 93/7
HELD [2] 8/15 8/21	HELICOPTERS [2] 82/26 82/27	HELICOPTERS [2] 82/26 82/27
HELP [10] 5/17 6/19 30/2 55/12 55/14 65/5 68/10 75/10 88/7 140/25	HELPED [1] 151/1	HELPED [1] 151/1
HELPLEFUL [6] 3/17 84/27 90/16 163/27 194/1 202/11	HENRY [1] 13/19	HENRY [1] 13/19
HER [1] 69/26	HERBERT [5] 1/25 3/3 3/9 108/1 137/14	HERBERT [5] 1/25 3/3 3/9 108/1 137/14
HERBERT'S [2] 2/3 3/9	HERD [1] 67/24	HERD [1] 67/24
HERE [131] 2/28 14/26 17/20 21/3 23/18 23/19 25/19 25/22 25/26 26/12 26/17 27/20 28/1 28/5 29/17 31/14 32/6 34/22 34/28 36/14 36/22 48/1 66/7 74/15 74/17 74/19 74/21 74/26 74/27 75/3 75/4 75/19 76/5 76/12 76/13 76/19 76/26 76/27 78/7 79/2 80/13 80/24 80/24 85/5 85/6 85/9 86/14 87/17 90/21 90/22 90/26 92/7 93/16 97/28 98/5 98/18 99/11 99/11 100/10 100/13 100/17 100/18 101/5 101/18 101/22 102/1 102/2 102/3 102/10 103/2 103/3 109/2 113/6 113/20 114/21 114/23 118/25 128/22 128/24 128/25 129/6 129/11 129/16 129/23 130/2 130/4 138/28 139/1 149/12 150/9 154/18 154/23 155/2 155/2 155/10 155/13 155/14 155/16 155/19 155/23 155/24 155/24 156/13 156/15 156/21 156/21 157/17 158/1 158/2 158/3 160/3 160/8 160/21 161/1 161/2 161/4 161/12 164/21 165/26 174/5 179/11 179/26 182/7 182/21 184/2 186/2 192/22 203/1 203/19 206/14 206/16	HERE [131] 2/28 14/26 17/20 21/3 23/18 23/19 25/19 25/22 25/26 26/12 26/17 27/20 28/1 28/5 29/17 31/14 32/6 34/22 34/28 36/14 36/22 48/1 66/7 74/15 74/17 74/19 74/21 74/26 74/27 75/3 75/4 75/19 76/5 76/12 76/13 76/19 76/26 76/27 78/7 79/2 80/13 80/24 80/24 85/5 85/6 85/9 86/14 87/17 90/21 90/22 90/26 92/7 93/16 97/28 98/5 98/18 99/11 99/11 100/10 100/13 100/17 100/18 101/5 101/18 101/22 102/1 102/2 102/3 102/10 103/2 103/3 109/2 113/6 113/20 114/21 114/23 118/25 128/22 128/24 128/25 129/6 129/11 129/16 129/23 130/2 130/4 138/28 139/1 149/12 150/9 154/18 154/23 155/2 155/2 155/10 155/13 155/14 155/16 155/19 155/23 155/24 155/24 156/13 156/15 156/21 156/21 157/17 158/1 158/2 158/3 160/3 160/8 160/21 161/1 161/2 161/4 161/12 164/21 165/26 174/5 179/11 179/26 182/7 182/21 184/2 186/2 192/22 203/1 203/19 206/14 206/16	HERE [131] 2/28 14/26 17/20 21/3 23/18 23/19 25/19 25/22 25/26 26/12 26/17 27/20 28/1 28/5 29/17 31/14 32/6 34/22 34/28 36/14 36/22 48/1 66/7 74/15 74/17 74/19 74/21 74/26 74/27 75/3 75/4 75/19 76/5 76/12 76/13 76/19 76/26 76/27 78/7 79/2 80/13 80/24 80/24 85/5 85/6 85/9 86/14 87/17 90/21 90/22 90/26 92/7 93/16 97/28 98/5 98/18 99/11 99/11 100/10 100/13 100/17 100/18 101/5 101/18 101/22 102/1 102/2 102/3 102/10 103/2 103/3 109/2 113/6 113/20 114/21 114/23 118/25 128/22 128/24 128/25 129/6 129/11 129/16 129/23 130/2 130/4 138/28 139/1 149/12 150/9 154/18 154/23 155/2 155/2 155/10 155/13 155/14 155/16 155/19 155/23 155/24 155/24 156/13 156/15 156/21 156/21 157/17 158/1 158/2 158/3 160/3 160/8 160/21 161/1 161/2 161/4 161/12 164/21 165/26 174/5 179/11 179/26 182/7 182/21 184/2 186/2 192/22 203/1 203/19 206/14 206/16
HERE IS [1] 100/17	HERE'S [5] 75/17 90/25 105/16 105/17 105/18	HERE'S [5] 75/17 90/25 105/16 105/17 105/18
HEREBY [1] 208/13	HEREIN [1] 37/19	HEREIN [1] 37/19
HERREMA [1] 1/23	HESITATE [1] 165/8	HESITATE [1] 165/8
HESITATES [1] 134/25	HEY [1] 130/1	HEY [1] 130/1
HI [1] 192/15	HIGH [13] 21/6 32/18 36/22 63/1 93/17 100/11 102/11 102/17 102/24 175/9 176/1 182/2 191/7	HIGH [13] 21/6 32/18 36/22 63/1 93/17 100/11 102/11 102/17 102/24 175/9 176/1 182/2 191/7
HIGHER [3] 143/7 168/25 198/4	HIGHLIGHTING [1] 48/15	HIGHLIGHTING [1] 48/15
HIGHLIGHTS [1] 72/10	HIGHLY [5] 36/16 62/23 108/15 133/1	HIGHLY [5] 36/16 62/23 108/15 133/1
177/21	HILL [1] 158/24	HILL [1] 158/24
HILLS [3] 1/19 29/27 46/17	HIM [14] 5/11 12/21 34/19 51/24 78/18 107/4 115/19 131/25 152/22 161/21 184/15 187/8 189/14 200/4	HIM [14] 5/11 12/21 34/19 51/24 78/18 107/4 115/19 131/25 152/22 161/21 184/15 187/8 189/14 200/4
HIROSHIMA [1] 20/26	HIS [35] 2/14 3/3 3/7 3/17 5/25 5/25 17/3 26/19 30/25 30/25 34/1 51/24 58/27 60/1 64/14 64/14 114/12 115/3 124/24 131/11 132/21 152/15 152/22 163/1 178/28 181/3 183/2 184/16 184/16 184/17 184/18 187/16 189/2 194/28 200/4	HIS [35] 2/14 3/3 3/7 3/17 5/25 5/25 17/3 26/19 30/25 30/25 34/1 51/24 58/27 60/1 64/14 64/14 114/12 115/3 124/24 131/11 132/21 152/15 152/22 163/1 178/28 181/3 183/2 184/16 184/16 184/17 184/18 187/16 189/2 194/28 200/4
HISTORIAN [8] 8/5 8/7 8/12 8/20 31/1 31/4 34/6 37/8	HISTORICAL [11] 7/25 8/16 10/22 12/19 42/12 42/18 53/6 175/24 175/25 176/2 176/5	HISTORICAL [11] 7/25 8/16 10/22 12/19 42/12 42/18 53/6 175/24 175/25 176/2 176/5
HISTORICALLY [1] 175/28	HISTORY [21] 7/5 7/7 7/8 7/9 7/13 9/7 9/21 10/8 10/9 10/17 10/23 11/3 11/5 12/12 21/10 21/14 34/5 34/15 37/5 56/5 56/5	HISTORY [21] 7/5 7/7 7/8 7/9 7/13 9/7 9/21 10/8 10/9 10/17 10/23 11/3 11/5 12/12 21/10 21/14 34/5 34/15 37/5 56/5 56/5
HIT [4] 72/10 75/27 77/2 78/4	HOFFMAN [1] 2/8	HOFFMAN [1] 2/8
HOLD [3] 33/25 181/20 199/4	HOLE [2] 27/26 159/10	HOLE [2] 27/26 159/10
HOME [5] 14/23 106/26 107/3 107/5 151/24	HON [4] 1/3 1/4 114/4 208/3	HON [4] 1/3 1/4 114/4 208/3
HONOR [119] 1/20 1/23 2/2 2/27 3/24 4/4 4/7 4/20 4/25 5/20 5/23 10/6 10/14 10/16 12/15 15/25 24/23 25/11 30/23 30/28 33/3 33/22 34/5 37/15 38/21 44/20 48/10 48/17 48/20 51/15 51/17 51/27 53/1 55/26 60/3 60/25 61/16 61/26 62/9 62/10 64/8 64/10 65/19 66/10 68/13 73/16 84/28 111/5 113/5 113/15 114/14 116/4 116/10 116/18 120/7 120/19 123/4 123/8 124/3 131/23 135/22 139/19 139/28 140/8 141/11 142/10 142/15 142/18 143/8 146/11 147/9 149/3 149/8 149/22 150/4 150/8 152/11 153/3 153/17 153/26 153/27 154/9 154/12 161/11 161/23 161/28 162/16 162/28 163/25 165/21 165/24 169/28 174/26 175/4 177/6 177/18 179/6 179/15 179/23 179/25 180/17 182/19 182/24 185/9 185/12 185/16 185/19 185/22 185/26 186/15 192/3 192/11 192/21 196/9 199/13 199/28 200/16 202/26 203/27	HONOR [119] 1/20 1/23 2/2 2/27 3/24 4/4 4/7 4/20 4/25 5/20 5/23 10/6 10/14 10/16 12/15 15/25 24/23 25/11 30/23 30/28 33/3 33/22 34/5 37/15 38/21 44/20 48/10 48/17 48/20 51/15 51/17 51/27 53/1 55/26 60/3 60/25 61/16 61/26 62/9 62/10 64/8 64/10 65/19 66/10 68/13 73/16 84/28 111/5 113/5 113/15 114/14 116/4 116/10 116/18 120/7 120/19 123/4 123/8 124/3 131/23 135/22 139/19 139/28 140/8 141/11 142/10 142/15 142/18 143/8 146/11 147/9 149/3 149/8 149/22 150/4 150/8 152/11 153/3 153/17 153/26 153/27 154/9 154/12 161/11 161/23 161/28 162/16 162/28 163/25 165/21 165/24 169/28 174/26 175/4 177/6 177/18 179/6 179/15 179/23 179/25 180/17 182/19 182/24 185/9 185/12 185/16 185/19 185/22 185/26 186/15 192/3 192/11 192/21 196/9 199/13 199/28 200/16 202/26 203/27	
HONOR'S [1] 165/2	HOPE [2] 120/3 128/14	HOPE [2] 120/3 128/14
HOPE [2] 120/3 128/14	HOPED [1] 206/20	HOPED [1] 206/20
HOPEFUL [1] 206/23	HORSE [1] 37/24	HORSE [1] 37/24
HORSE-DRAWN [1] 37/24	HOST [2] 118/14 122/11	HOST [2] 118/14 122/11
HOT [3] 29/16 29/17 161/5	HOT [3] 29/16 29/17 161/5	HOT [3] 29/16 29/17 161/5
HOTEL [1] 2/4	HOUR [8] 37/11 37/24 37/27 38/1 38/4 86/11 113/11 113/21	HOUR [8] 37/11 37/24 37/27 38/1 38/4 86/11 113/11 113/21
HOURS [1] 179/9	HOUSES [4] 46/26 91/4 175/13 175/13	HOUSES [4] 46/26 91/4 175/13 175/13
HOUSING [18] 56/14 58/22 58/25 117/17 117/21 117/22 126/18 133/19 133/20 148/4 166/20 167/6 168/3 168/4 168/6 175/11 175/11 175/15	HOW [78] 10/24 11/2 30/5 38/28 39/24 44/2 50/11 56/15 58/7 59/18 60/19 60/22 70/2 70/2 71/20 75/2 79/21 79/22 81/2 81/22 81/22 82/2 82/11 82/15 83/17 83/19 87/24 87/25 89/14 93/10 93/27 96/7 97/4 105/18 105/19 107/21 114/20 116/1 124/5 131/14 132/11 132/17 133/21 134/12 135/8 145/1 145/6 156/11 158/20 163/19 166/4 166/11 168/5 169/18 169/23 169/26 170/3 174/18	HOW [78] 10/24 11/2 30/5 38/28 39/24 44/2 50/11 56/15 58/7 59/18 60/19 60/22

H	58/2 59/3 59/4 59/5 59/21 59/26 60/5 ILLUSTRATE [1] 103/14 IMAGE [2] 25/9 27/9 IMAGINE [1] 147/22 IMMEDIATELY [2] 102/10 143/3 IMMENSE [1] 105/8 IMPACT [12] 37/9 76/21 77/4 77/8 85/8 105/1 105/1 136/16 137/4 147/5 152/21 190/26 IMPACTS [1] 76/22 IMPEACHMENT [1] 51/19 IMPERIAL [1] 20/14 IMPLEMENTATION [1] 122/19 IMPLEMENTED [1] 170/27 IMPLY [1] 92/18 IMPORTANCE [1] 72/25 IMPORTANT [10] 2/28 23/3 29/24 36/21 46/21 72/1 86/21 88/20 97/6 97/10 IMPORTED [2] 169/17 185/14 IMPOSITION [1] 59/16 IMPROPER [4] 51/18 55/20 177/11 180/10 IMPROVE [1] 171/1 IMPROVED [1] 171/23 IMPROVEMENT [2] 123/27 146/21 IMPROVEMENTS [1] 146/23 IMPROVING [1] 146/22 IN-BETWEEN [1] 13/3 IN-FLIGHT [3] 56/27 62/6 62/6 INADMISSIBLE [2] 4/12 4/15 INAPPROPRIATE [2] 127/6 127/7 INAUDIBLE [4] 4/28 15/25 65/25 140/7 INCIDENTALLY [1] 102/19 INCLUDE [4] 32/24 75/23 80/21 146/1 INCLUDED [2] 110/11 162/3 INCLUDES [1] 148/2 INCLUDING [7] 46/16 133/17 133/19 147/11 168/3 171/16 203/9 INCOMPATIBLE [1] 79/4 INCORPORATED [1] 20/13 INCORPORATION [1] 32/12 INCREASE [1] 17/25 INCREASED [1] 99/20 INCREASES [1] 99/25 INCREDIBLY [1] 74/18 INDEED [1] 18/14 INDICATED [4] 4/3 12/20 179/8 200/7 INDICATES [1] 42/19 INDICATING [17] 1/21 3/15 6/3 12/4 26/12 27/17 29/9 48/15 80/14 114/22 120/18 123/10 150/9 165/23 190/4 196/7 197/13 INDICATION [1] 30/12 INDISCERNIBLE [4] 81/28 96/18 172/10 200/22 INDIVIDUALS [2] 58/17 145/7 INDUSTRIAL [8] 32/20 69/10 70/25 71/12 72/19 124/15 148/3 166/13 INERTIAL [1] 35/10 INEXTRICABLY [1] 33/17 INFECT [1] 66/5 INFLUENTIAL [1] 15/10 INFORMATION [13] 2/11 12/8 18/13 100/27 101/7 135/9 141/28 148/22 151/2 152/20 154/10 173/4 201/11 INFRASTRUCTURE [20] 77/15 96/6 96/10 97/2 97/9 100/24 101/8 101/25 109/25 110/12 128/4 132/6 143/18 145/27 146/1 146/22 146/28 149/15 150/25 151/5 INITIAL [3] 11/18 24/8 44/6 INITIALLY [1] 29/1 INSIDE [4] 75/14 98/16 102/5 155/5 INSPECTS [1] 87/1 INSTALLATION [43] 20/19 63/20 66/22 72/14 91/7 91/9 92/1 115/15 115/18 125/6 137/18 137/19 144/11 145/10 145/26 146/7 146/23 147/19 147/22 147/27 152/1 152/9 157/26 159/7 160/4 160/6 160/14 166/15 167/19 168/26 170/18 170/25 170/27 171/7 176/19 176/24 176/28 188/17 188/21 190/25 193/23 205/13 205/27 INSTALLATION'S [1] 176/21 INSTALLATIONS [1] 49/15 INSTALLED [2] 55/1 167/18 INSTALLING [1] 104/9 INSTANCE [1] 89/26 INSTEAD [1] 199/15 INSTITUTE [5] 7/16 7/23 7/27 8/2 8/2 INSTITUTION [1] 8/9 INSTRUCTION [1] 55/20 INSTRUMENTATION [8] 77/11 79/3 79/4 97/26 103/22 104/9 104/10 104/20 INSTRUMENTED [2] 77/8 105/2 INSTRUMENTS [2] 77/12 195/27 INSULATED [1] 93/9 INTEGRATION [2] 32/4 35/16 INTELLIGENCE [2] 31/12 32/27 INTEND [1] 42/6 INTENDED [3] 40/9 42/13 42/19 INTENSELY [1] 29/17 INTENT [1] 41/25 INTENTIONALLY [1] 91/27 INTERAGENCY [1] 9/4 INTERCONTINENTAL [2] 31/17 38/1 INTEREST [4] 17/3 39/9 48/1 164/8 INTERESTED [2] 18/11 19/2 INTERESTING [7] 12/18 12/22 21/18 27/28 39/4 74/7 163/23 INTERFERE [1] 13/24 INTERNAL [1] 117/15 INTERNATIONAL [1] 69/4 INTERPOSE [2] 52/27 111/6 INTERRELATIONSHIP [1] 34/2 INTERRUPT [3] 13/9 23/27 37/12 INTERRUPTED [1] 19/17 INTERRUPTING [2] 165/11 165/12 INTERRUPTION [2] 65/25 81/28 INTERSECTION [1] 28/11 INTERSERVICE [1] 118/15 INTRIGUING [1] 17/6 INTRODUCE [2] 40/19 172/3 INTRODUCTION [2] 41/13 45/20 INV [1] 2/9 INVENTORY [1] 115/22 INVESTED [1] 170/16 INVESTIGATIONS [1] 10/22 INVESTMENT [1] 146/14 INVOLVE [2] 62/23 167/6 INVOLVED [5] 43/1 54/18 57/2 185/27 207/18 INVOLVEMENT [2] 42/4 59/5 INVOLVES [2] 43/22 62/22 IRON [1] 143/20 IRRIGATION [4] 124/16 159/2 160/22 166/21 IS [585] IS DEFINED [1] 117/12 IS IFFY [1] 109/27 ISLAND [1] 49/25 ISLANDS [3] 143/24 157/25 160/2 ISN'T [2] 127/16 138/17 ISOLATED [2] 93/24 94/4 ISOLATION [1] 93/21 ISSUE [11] 12/20 46/18 46/19 61/27 62/27 63/21 91/3 93/24 110/1 111/16 199/27 ISSUED [2] 124/12 171/11 ISSUES [15] 8/25 60/2 62/22 62/23 91/14 93/16 93/17 110/3 144/9 206/17 206/18
I	I'D [21] 1/27 12/17 72/5 73/16 73/26 81/9 93/19 107/4 107/9 112/4 116/4 116/6 117/20 147/9 153/25 165/25 183/3 183/9 195/25 201/10 201/13 I'LL [26] 4/7 4/26 14/6 16/22 48/19 51/11 58/27 66/5 69/25 72/10 124/3 125/5 139/25 139/28 154/9 156/16 163/24 164/27 165/16 168/25 179/13 180/15 183/8 193/21 201/26 202/22 I'M [137] 2/22 3/21 4/27 10/1 12/10 12/19 12/21 13/8 14/6 15/20 15/26 16/1 19/17 23/27 24/9 25/6 26/8 31/4 33/5 34/17 35/8 35/9 39/10 41/11 45/14 46/12 46/15 48/8 50/16 50/18 51/13 51/14 51/23 57/14 59/1 60/7 60/8 60/26 61/16 61/17 61/18 62/2 66/16 67/14 67/16 68/13 81/11 81/11 88/6 92/12 93/17 93/17 94/9 94/14 94/22 94/24 95/23 97/22 98/1 103/8 111/6 115/14 115/27 116/12 119/13 119/20 119/24 119/25 125/16 125/16 132/15 134/9 134/10 134/27 136/8 140/8 142/15 142/22 144/3 145/13 145/16 145/18 145/27 146/5 146/8 146/15 146/16 149/1 149/3 149/22 151/18 152/11 153/14 153/17 157/7 157/8 157/16 161/11 163/23 164/6 164/11 164/13 164/19 165/6 165/10 168/8 169/4 169/12 171/3 171/4 172/6 177/6 177/12 178/21 178/21 179/20 179/22 182/19 185/5 187/13 189/12 193/13 195/23 195/28 196/5 199/23 201/18 202/20 202/23 203/10 203/14 203/26 204/6 204/12 206/5 206/23 207/3 I'VE [28] 72/27 93/13 95/18 96/15 96/16 96/17 98/1 108/21 112/27 116/27 117/2 123/4 125/4 125/21 143/11 143/17 145/2 156/18 156/22 157/24 160/1 161/15 161/15 163/1 163/10 182/15 187/14 206/22 I'VE ASKED [1] 182/15 I.S.R [2] 31/12 78/4 IDEA [9] 71/16 78/4 81/18 81/21 97/24 104/13 156/4 187/9 198/6 IDEALLY [1] 27/6 IDENTIFICATION [8] 3/10 116/5 116/17 116/19 120/10 120/12 123/5 150/21 IDENTIFIED [18] 6/27 11/25 31/1 37/18 68/3 74/23 85/11 117/5 117/21 121/2 123/18 141/23 148/13 154/3 172/20 180/24 197/9 201/21 IDENTIFY [5] 16/26 67/26 85/3 97/14 165/16 IFFY [1] 109/27 II [20] 13/21 17/26 17/27 18/1 19/18 21/3 24/16 28/16 47/7 47/10 47/25 49/19 58/1

I ISSUES... [4] 206/25 206/28 207/1 207/2 IT [441] IT'S [160] 1/22 6/2 6/5 12/18 13/3 17/1 18/26 23/25 27/22 31/19 35/20 36/3 36/5 39/20 39/24 45/10 46/15 46/17 46/18 46/25 47/6 47/7 48/18 48/23 51/22 52/24 57/26 60/8 60/17 60/17 65/17 66/19 67/19 67/24 72/1 74/4 74/17 74/18 75/3 75/28 76/10 76/11 76/27 77/20 78/24 82/8 84/12 84/24 84/28 85/21 86/5 86/6 86/15 87/16 87/28 88/3 88/9 88/13 88/20 88/22 90/4 90/7 90/9 90/24 91/20 91/21 92/21 93/8 93/24 95/20 96/22 99/20 100/26 100/27 104/13 105/27 106/1 107/6 108/15 109/19 112/8 116/10 116/10 116/13 116/15 116/16 117/18 118/14 118/24 118/25 119/2 121/12 121/13 121/19 122/2 122/3 124/4 124/5 125/6 126/7 129/18 130/28 131/14 133/1 134/10 135/13 137/7 139/16 139/18 139/18 139/25 140/2 148/9 149/12 150/16 150/21 152/13 152/15 154/12 155/16 157/27 157/27 158/3 158/6 160/12 161/5 161/22 162/7 165/25 166/19 166/20 166/21 166/25 166/26 170/1 172/8 172/16 173/15 175/3 176/7 176/11 180/10 182/2 182/19 184/20 185/13 191/6 191/26 191/27 195/27 196/17 196/17 199/3 199/16 199/16 201/3 201/9 206/14 207/9 207/16 IT'S A [1] 88/13 ITEM [2] 123/26 124/1 ITEMS [1] 127/22 ITS [25] 9/25 10/24 10/24 11/7 20/27 23/26 24/4 25/4 26/10 31/23 31/24 32/12 49/13 62/16 82/17 82/18 104/9 158/18 177/15 178/16 184/6 186/13 186/18 191/19 199/5 ITSELF [12] 4/15 13/10 16/4 18/17 36/5 45/5 45/7 45/10 72/11 122/3 149/24 182/22	180/20 183/12 185/8 192/10 192/15 197/6 197/10 197/17 201/9 201/26 202/28 203/3 JUDKINS' [2] 149/4 161/14 JUMPED [1] 58/5 JUNE [3] 142/20 143/2 170/23 JUNE 1974 [1] 142/20 JUST [157] 1/23 3/26 4/2 5/27 6/6 6/7 7/4 7/20 10/22 14/5 16/17 22/16 26/11 26/18 32/9 33/12 33/25 37/12 38/14 40/10 45/6 46/18 47/17 51/14 52/24 53/2 55/16 55/19 55/23 57/7 57/16 61/26 62/10 64/12 65/18 66/2 66/18 69/21 69/25 70/5 70/27 71/19 72/10 73/26 74/28 75/1 75/6 75/22 75/24 76/8 76/27 76/28 77/7 77/9 77/16 81/18 81/19 82/27 83/3 83/15 83/26 85/19 86/11 86/13 86/15 88/6 88/16 88/27 91/28 92/14 92/17 96/28 98/17 98/18 98/22 99/13 99/15 99/20 102/25 103/16 104/19 108/17 108/27 109/1 109/25 111/14 111/23 113/8 117/17 118/24 125/5 129/18 129/18 129/19 131/14 132/17 132/17 132/20 133/21 135/3 135/24 136/3 136/10 137/7 138/17 144/16 146/8 146/13 146/25 146/26 148/17 149/13 149/27 151/22 153/3 154/21 154/27 156/7 156/11 156/23 156/26 157/19 157/20 161/21 161/22 162/26 164/18 165/25 165/28 169/16 172/5 173/2 173/20 173/21 174/11 175/20 176/21 177/20 177/24 181/24 182/25 183/13 187/3 187/26 189/7 190/23 191/4 191/26 201/10 202/23 202/24 203/5 203/27 204/12 204/20 205/10 205/25 JUSTICE [2] 1/14 2/12 JUSTIFY [1] 198/3	KUHS [22] 2/3 2/3 2/1 3/6 4/5 53/19 53/25 61/5 61/15 111/4 114/14 124/9 138/17 150/15 162/5 162/26 164/20 171/8 179/21 192/4 198/27 201/7 KUHS'S [1] 162/20 L L.A [3] 1/26 29/27 46/17 LAB [8] 30/4 79/25 80/10 80/16 80/18 118/21 121/28 166/26 LABEL [14] 12/2 16/23 16/27 62/1 62/3 141/13 148/9 148/14 148/27 149/25 149/26 154/1 154/13 161/23 LABELED [2] 148/9 172/8 LABELING [1] 162/19 LABORATORY [2] 29/7 148/5 LACHLAN [1] 1/17 LACK [3] 92/1 110/11 159/24 LACKS [1] 177/8 LADY [1] 69/24 LAID [1] 180/14 LAKE [93] 13/11 13/25 14/1 14/1 14/3 14/9 14/10 14/11 14/20 15/8 15/11 15/18 15/19 17/8 17/9 17/14 19/4 19/6 19/12 19/12 21/23 25/13 25/16 25/28 26/1 27/5 27/6 27/9 27/10 27/10 28/12 28/12 31/23 38/10 41/1 41/1 41/4 42/20 44/24 44/26 45/5 45/7 45/7 45/10 45/22 46/2 46/3 48/6 60/18 75/3 75/5 75/18 76/12 76/14 76/16 76/17 84/16 84/25 85/7 85/9 85/16 86/20 86/25 87/2 87/5 87/5 87/7 87/10 87/15 87/24 88/1 88/3 88/14 88/19 88/24 90/5 90/8 90/26 93/15 95/11 96/5 108/22 108/28 109/3 118/26 148/6 151/7 155/7 156/8 157/1 157/6 157/14 158/19 LAKE'S [1] 25/21 LAKES [2] 40/27 118/17 LAKESHORE [4] 20/5 20/20 29/8 60/18 LANCASTER [1] 90/21 LAND [26] 2/6 14/25 19/5 26/19 28/14 40/9 41/2 41/3 42/13 42/19 45/4 45/24 84/25 88/2 89/6 100/6 100/7 100/12 100/16 100/22 102/6 115/22 115/26 133/15 146/5 157/13 LANDABLE [3] 76/13 76/13 86/22 LANDED [1] 102/12 LANDING [17] 11/19 13/7 14/21 25/4 26/16 27/12 28/10 40/27 45/8 62/3 62/5 87/22 87/25 87/27 88/1 93/15 157/6 LANDINGS [3] 25/16 25/18 88/25 LANDOWNERS [1] 92/4 LANDSCAPING [6] 170/21 170/22 170/28 171/7 171/22 175/27 LANE [1] 146/21 LANGLEY [3] 41/26 49/25 56/13 LAPIS [1] 2/6 LARGE [27] 13/23 27/1 29/17 30/18 30/19 31/24 41/1 66/20 72/19 74/18 75/3 76/9 90/24 98/3 106/12 106/21 110/2 119/24 121/26 124/5 136/19 136/21 136/28 137/21 137/28 156/13 166/26 LARGELY [2] 24/20 86/22 LARGER [3] 116/1 116/2 163/24 LARGEST [5] 19/5 100/7 115/21 115/23 115/24 LAS [2] 98/23 98/24 LASER [4] 74/11 107/2 107/3 117/9 LASER-GUIDED [2] 107/2 107/3 LAST [15] 2/18 5/27 27/15 37/22 38/14 123/23 124/28 149/20 152/25 153/24 161/15 168/8 168/12 171/6 175/25 LATE [5] 10/4 32/12 50/9 59/13 106/11 LATER [7] 13/20 21/26 40/16 47/22 49/24 82/5 82/20 LAUNCH [2] 102/4 104/27
--	--	--

L
LAUNCHED [4] 41/24 102/19 102/20 102/20
LAUNCHING [1] 32/26
LAW [3] 1/17 53/28 54/4
LAWS [2] 79/22 82/17
LAWYER [1] 57/14
LAWYERS [2] 50/19 134/16
LAY [2] 124/22 180/16
LAYOUT [1] 74/10
LE [1] 2/5
LEAD [2] 20/15 20/17
LEADER [1] 69/14
LEADERSHIP [3] 7/15 42/8 176/23
LEADING [2] 43/5 186/4
LEADS [3] 108/11 138/6 156/12
LEAKY [1] 170/19
LEAPT [1] 57/28
LEARN [3] 13/16 81/7 88/24
LEARNED [1] 43/3
LEAST [9] 30/7 40/15 108/7 113/19 119/15 123/16 146/27 160/8 162/21
LEAVE [5] 33/11 35/24 96/27 139/25 159/23
LEE [1] 1/15
LEEMAN [1] 60/12
LEEWAY [1] 12/22
LEFT [4] 2/4 37/21 119/8 155/3
LEGAL [5] 12/20 57/12 57/15 164/21 206/28
LEGION [1] 144/19
LEININGER [12] 1/15 1/19 2/16 2/24 2/26 4/19 149/21 163/2 165/12 179/7 180/16 188/9
LEININGER'S [1] 179/28
LENGTH [2] 27/5 99/24
LENGTHY [1] 33/27
LESS [2] 146/10 191/7
LET [22] 16/26 23/27 26/25 37/12 44/14 44/22 48/18 54/6 66/8 68/26 98/6 121/17 123/23 129/13 131/16 131/25 161/21 179/22 189/7 197/5 198/17 198/28
LET'S [60] 3/15 4/6 5/11 7/3 8/4 10/22 11/21 12/2 12/7 22/13 25/6 28/15 31/7 32/7 33/11 46/6 61/12 74/1 84/6 84/26 89/16 90/13 90/14 92/20 96/7 96/13 97/12 106/9 106/10 113/21 122/9 142/16 142/23 146/25 148/26 150/25 150/26 157/15 157/22 165/14 167/4 168/18 170/12 172/3 174/21 175/5 175/17 175/20 176/12 176/14 178/11 179/10 180/14 180/18 182/17 183/12 186/21 189/25 191/13 198/14
LEUHMANN [9] 29/6 29/7 29/21 29/23 30/3 60/14 60/15 60/20 60/23
LEVEL [34] 57/12 70/13 70/16 70/18 70/21 70/23 70/25 71/2 71/8 71/10 71/16 100/21 102/15 102/16 127/14 127/14 128/3 129/17 129/21 131/4 131/5 131/13 131/15 132/19 137/8 137/14 137/15 143/5 143/7 143/12 143/17 146/16 169/6 207/17
LEVELS [2] 63/6 124/17
LEVIN [1] 2/13
LICENSED [2] 193/12 193/14
LIEUTENANT [3] 143/9 143/10 144/6
LIFE [8] 62/27 69/19 83/23 83/24 93/24 160/13 171/1 189/3
LIFTER [1] 38/2
LIKE [65] 1/27 8/28 12/17 15/1 15/15 16/13 30/9 30/19 32/17 36/15 41/7 45/18 47/5 48/9 49/10 51/7 55/13 57/11 58/19 63/8 71/14 72/5 73/26 81/20 84/17 86/8 89/24 91/3 93/6 96/21 96/28 100/9 104/13 106/1 107/4

111/12 116/4 116/6 116/18 116/19 117/12
117/20 122/17 132/11 135/15 140/1 141/11
147/9 153/2 153/25 161/12 164/28 165/26
166/22 167/20 182/3 182/3 183/3 183/9
191/2 195/18 195/24 195/25 201/10 202/21
LIKELIHOOD [1] 137/24
LIKELY [7] 26/21 38/3 108/16 110/23
137/20 160/5 205/25
LIKEWISE [2] 83/22 128/15
LIMIT [4] 44/1 44/1 112/12 164/6
LIMITATIONS [1] 94/20
LINCOLN'S [1] 207/20
LINE [21] 44/1 73/6 74/27 98/12 113/16
117/17 129/14 131/16 148/1 148/2 154/18
154/23 156/23 166/17 166/23 184/15 184/16
187/8 187/8 195/2 195/2
LINE 1 [1] 129/14
LINES [12] 48/23 51/2 74/21 117/15 117/18
151/9 151/9 151/10 154/26 154/26 161/9
161/9
LINES 22 [1] 51/2
LINES 7 [1] 48/23
LINK [6] 24/11 24/13 24/17 34/5 34/22
198/6
LINKAGE [1] 31/26
LINKED [1] 101/12
LIQUID [1] 29/11
LIST [1] 140/1
LISTED [2] 95/6 95/7
LISTEN [4] 1/16 55/23 58/6 165/3
LISTING [1] 132/8
LITERALLY [1] 29/22
LITTLE [33] 33/12 33/14 36/14 44/6 44/7
50/6 50/17 62/17 63/5 67/15 67/17 69/26
75/22 86/15 88/13 89/4 92/22 94/5 94/11
98/4 98/17 101/18 105/4 112/15 134/26
146/9 155/26 156/2 156/7 160/17 167/4
170/20 181/25
LIVE [9] 14/28 54/12 55/8 55/9 58/25 63/2
108/25 133/22 160/5
LIVES [2] 25/15 107/18
LIVING [3] 56/14 58/22 160/11
LLC [1] 1/21
LLP [1] 1/19
LOAD [2] 27/23 91/26
LOANER [1] 81/12
LOCATED [8] 24/7 26/14 88/28 117/18
117/23 155/18 156/26 157/26
LOCATING [1] 119/3
LOCATION [3] 118/1 128/6 185/25
LOCATIONS [4] 159/11 185/28 186/4
186/6
LOCKHEED [1] 17/17
LOCOMOTIVE [1] 37/11
LONG [31] 2/6 25/28 25/28 27/5 31/17
32/26 33/17 49/25 71/7 71/13 75/1 75/2
88/22 90/28 105/25 106/7 106/16 106/16
106/18 106/20 107/21 108/24 130/16 130/17
133/8 145/1 155/1 155/4 155/6 155/7 205/20
LONG-RANGE [2] 32/26 71/7
LONG-TERM [3] 71/13 133/8 205/20
LONGER [3] 29/27 60/6 128/1
LOOK [42] 11/17 21/17 26/10 27/8 32/19
37/4 42/28 43/19 48/9 53/5 61/5 65/10 67/12
67/22 76/25 87/4 90/9 90/10 90/15 92/23
103/15 104/12 106/6 109/2 116/26 117/22
124/28 127/21 127/21 128/8 130/9 132/7
133/23 134/28 147/26 149/18 163/20 164/15
168/14 172/5 197/19 202/21
LOOKED [6] 37/8 160/27 188/16 192/17
193/22 194/4
LOOKING [19] 10/23 44/13 45/6 57/16
71/7 71/9 71/11 104/18 104/23 109/10

112/22 116/12 137/26 163/26 164/3 177/25
190/23 202/22 202/23
LOOKS [7] 36/15 117/1 117/2 117/12 153/1
202/25 202/27
LOS [5] 1/2 1/3 114/3 208/2 208/13
LOSE [2] 74/6 168/27
LOSS [2] 106/27 170/20
LOSSES [1] 170/13
LOST [2] 90/4 93/12
LOT [17] 2/11 26/2 27/25 39/22 50/17 62/22
63/5 90/6 94/6 98/2 104/18 107/25 156/17
161/1 163/10 163/11 164/11
LOTS [1] 108/23
LOW [4] 20/22 27/1 63/27 100/21
LUKE [1] 136/18
LUNCH [2] 113/11 113/21

M-I-C-H-A-E-L [1] 65/11
M.C.L [2] 169/6 169/14
M.W [1] 159/13
M.W.R [5] 94/7 94/8 158/11 159/14 159/15
MACH [2] 55/6 56/24
MACRO [1] 57/16
MADE [11] 3/10 4/8 21/20 25/16 25/17
107/14 127/13 180/12 186/28 187/9 187/10
MAIL [8] 33/7 197/3 197/10 197/18 197/21
197/26 198/14 198/23
MAILS [1] 197/6
MAIN [21] 74/27 74/28 76/16 85/5 85/7
117/25 118/3 146/17 148/2 154/17 155/2
155/3 155/8 155/16 156/12 156/25 157/19
157/20 174/16 174/16 178/27
MAINS [1] 89/25
MAINTAIN [1] 128/3
MAINTAINED [3] 9/12 15/1 63/21
MAINTAINERS [3] 14/27 58/17 104/5
MAINTAINING [1] 63/19
MAINTENANCE [11] 14/27 66/24 103/20
119/1 145/28 146/28 155/16 155/17 155/20
166/14 168/10
MAJOR [12] 7/7 7/21 7/22 23/1 25/12 73/11
109/3 115/4 122/2 146/23 156/13 176/26
MAJOR AIR [1] 73/11
MAJORS [1] 143/10
MAKE [21] 26/17 27/3 72/28 74/20 79/8
80/3 86/2 86/19 87/26 88/26 100/25 107/7
107/15 107/17 108/24 124/8 133/8 184/22
186/27 195/19 198/28
MAKES [9] 77/14 84/6 84/8 84/12 84/14
99/26 130/11 130/12 163/4
MAKING [6] 52/16 128/19 161/11 176/19
186/9 190/9
MALL [1] 91/22
MANAGE [5] 86/23 93/27 97/4 110/4 110/7
MANAGEMENT [10] 69/12 73/17 121/18
123/27 143/17 145/20 146/6 146/7 147/10
184/21
MANAGER [1] 188/3
MANAGING [1] 143/18
MANDATE [4] 124/12 125/2 171/25 171/26
MANDATED [2] 88/24 124/18
MANEUVER [1] 19/14
MANEUVERS [2] 15/5 40/7
MANNED [2] 90/27 91/1
MANNER [3] 64/5 96/23 181/7
MANUALS [1] 206/2
MANUFACTURE [1] 207/2
MANUFACTURED [2] 22/12 23/18
MANUFACTURERS [1] 85/25
MANY [30] 32/17 35/2 39/9 47/17 47/18
49/15 52/5 56/15 58/7 59/18 60/19 60/22
74/17 83/20 91/19 91/25 92/21 100/14

M		
MANY... [12] 105/18 105/19 125/7 128/1 133/21 134/4 134/12 136/23 143/12 145/6 174/18 207/16	MEANT [3] 62/17 103/20 136/4	MISSILE [4] 32/26 36/15 37/2 102/3
MAP [2] 74/24 90/24	MEASURANDS [1] 105/19	MISSILES [1] 29/5
MAPS [4] 2/7 2/8 3/12 3/12	MEASURE [2] 115/28 137/7	MISSING [1] 82/16
MARCH [3] 13/18 14/24 41/23	MEASURES [2] 171/9 172/1	MISSION [48] 10/25 10/27 66/23 66/24 77/18 81/3 97/22 102/5 102/6 102/11 104/12 105/25 125/15 125/19 125/20 125/21 125/23 125/25 125/25 125/27 126/2 126/2 126/4 126/6 126/15 126/27 129/6 129/11 129/16 136/15 147/6 148/20 149/24 166/7 168/26 176/8 176/9 176/14 177/26 177/26 178/2 178/9 189/16 190/26 191/15 191/15 205/12 205/22
MARCH 16 [1] 41/23	MECHANICAL [1] 178/22	MISSIONS [20] 20/9 32/24 82/23 82/23 83/6 110/22 111/11 127/17 128/5 129/3 129/10 132/8 176/19 176/20 188/6 188/7 188/21 188/22 205/5 205/28
MARILYN [1] 2/13	MECHANICS [1] 103/24	MISSTATES [1] 189/10
MARINE [2] 82/26 82/27	MECHANIZATION [1] 136/14	MITCH [3] 73/28 75/7 98/6
MARK [6] 20/16 120/10 120/11 120/11 120/13 201/18	MEDAL [2] 144/20 144/21	MITCHELL [2] 7/27 49/25
MARKED [12] 6/2 6/4 16/12 27/10 116/4 116/16 120/16 123/4 150/21 197/5 197/17 202/6	MEET [2] 159/1 169/5	MIX [2] 169/11 169/12
MARSHAL [1] 145/17	MEMBER [3] 7/26 8/17 9/9	MIXED [1] 159/5
MARTINEZ [1] 75/23	MEMBERS [6] 104/21 113/8 142/7 151/28 160/10 160/10	MIXING [1] 169/15
MARYLAND [2] 7/6 7/11	MEMORIZED [1] 174/19	MIXTURE [2] 158/21 159/4
MASS [3] 115/22 115/26 133/15	MEMORY [3] 22/16 51/26 190/1	MOBILITY [3] 37/6 37/25 37/27
MASSIVE [3] 16/16 17/22 58/11	MENTIONED [12] 45/1 58/10 60/11 88/2 89/21 93/13 95/11 100/10 125/4 133/11 154/17 166/7	MOCK [1] 20/19
MASTER'S [2] 69/5 143/16	MENU [1] 109/17	MOCK-UP [1] 20/19
MASTERS [1] 5/7	MERELY [4] 3/11 14/18 62/21 131/28	MOD [2] 130/5 130/6
MATCH [1] 28/23	MERIT [1] 144/19	MODE [1] 1/17
MATERIAL [4] 59/15 103/26 112/19 113/5	MERITORIOUS [1] 144/20	MODEL [2] 33/2 44/8
MATH [4] 193/10 193/11 195/17 195/18	MET [4] 171/21 171/24 171/26 184/14	MODERN [3] 13/4 14/22 15/8
MATTER [15] 1/24 49/22 75/6 76/25 77/14 85/19 89/12 93/23 95/17 105/15 106/15 108/27 109/1 154/28 193/2	METAL [3] 12/28 13/5 43/5	MODERNIZATION [1] 107/14
MATTERS [1] 4/16	METEOROLOGIST [1] 46/15	MODIFIED [2] 55/4 57/1
MAX [2] 86/3 86/4	METER [2] 168/5 168/17	MOJAVE [1] 45/9
MAXIMIZE [1] 197/27	METERED [3] 168/1 168/4 168/15	MOMENT [5] 22/13 37/13 48/20 149/23 172/5
MAXIMUM [4] 169/6 173/12 173/13 174/23	METERS [1] 168/7	MONDAY [1] 207/9
MAXWELL [1] 69/13	METHOD [1] 81/23	MONITOR [1] 88/13
MAY [43] 5/15 5/20 5/20 9/10 10/19 15/6 16/20 21/7 25/25 36/8 36/11 43/13 47/26 48/20 54/18 65/3 65/19 73/23 74/13 97/14 99/22 113/13 120/7 120/22 123/5 126/4 136/28 139/14 139/24 140/17 140/23 144/8 147/16 153/12 154/10 163/15 165/24 170/4 172/5 177/13 177/16 199/23 200/24	METHODOLOGY [1] 184/20	MONITORING [1] 77/12
MAY 2010 [1] 36/8	METHODS [1] 82/11	MONOPLANE [2] 12/28 43/5
MAY 2013 [1] 36/11	MIC [3] 67/18 160/16 186/1	MONTH [1] 142/27
MAYBE [3] 71/9 97/12 165/14	MICHAEL [8] 1/17 1/23 2/8 3/4 64/25 65/10 65/11 68/4	MONTHAN [4] 181/13 181/15 181/28 182/1
MC [2] 1/17 1/24	MICHAEL T [1] 65/10	MONTHLY [2] 174/1 184/1
MCNAIR [1] 70/27	MID [3] 15/4 173/10 174/10	MONTHS [4] 71/9 71/9 89/12 162/26
ME [92] 2/5 3/16 8/9 16/26 16/26 23/27 26/25 31/19 37/8 37/12 44/14 44/22 48/17 48/18 54/6 55/16 65/14 65/18 66/4 66/8 67/26 68/26 76/7 80/27 81/2 83/12 84/7 85/1 92/5 92/6 92/6 94/4 94/6 94/11 94/14 98/6 99/2 100/20 107/20 108/11 108/15 108/24 111/15 115/28 116/28 117/13 119/28 120/27 121/17 123/23 124/8 125/20 127/6 127/8 129/13 130/14 131/16 134/25 134/25 146/26 147/18 148/25 149/5 149/16 150/4 150/19 152/5 162/5 163/9 163/20 168/25 174/25 179/24 181/12 183/4 189/7 189/27 191/26 193/19 193/26 194/7 194/21 196/1 197/5 197/24 198/17 198/28 200/4 202/7 202/15 203/5 205/2	MIDDLE [3] 28/27 41/2 91/20	MOON [1] 29/22
MEAN [26] 13/8 34/11 41/3 49/20 52/5 59/16 75/26 88/5 94/13 96/23 105/21 117/16 117/18 121/13 121/19 125/18 126/1 126/13 128/10 129/7 130/1 133/14 136/12 136/15 136/19 154/20	MIDMORNING [1] 61/7	MORALE [4] 94/9 158/13 159/16 159/20
MEANING [2] 103/6 103/9	MIGHT [32] 28/5 52/26 54/14 55/12 55/14 58/21 58/22 58/23 58/24 60/27 65/9 70/5 75/10 84/26 90/14 90/15 95/28 126/28 134/15 145/9 158/11 164/23 177/3 177/3 177/3 177/4 185/24 187/17 190/26 199/15 199/18 207/11	MORE [47] 20/10 31/10 33/12 33/14 36/14 44/7 46/17 47/17 47/18 52/18 61/6 61/19 61/21 62/17 62/20 70/24 81/17 86/15 90/16 93/5 93/23 94/5 94/11 99/25 99/25 99/26 102/28 106/17 107/25 111/19 116/3 122/21 130/11 130/12 131/3 133/28 144/5 144/9 155/27 156/7 160/5 164/14 167/4 169/14 176/17 181/25 182/11
MEANS [28] 42/3 47/17 50/6 71/23 71/26 72/2 84/21 97/22 101/2 103/21 103/28 104/1 104/7 104/8 104/8 104/8 104/9 104/10 104/11 105/11 106/6 107/13 112/15 119/25 126/14 126/18 127/28 128/5	MILE [4] 25/27 44/26 75/28 99/7	MORNING [9] 1/10 1/20 1/23 2/4 38/28 39/1 41/23 53/24 125/14
	MILES [27] 19/5 20/10 37/11 37/24 37/27 37/28 38/4 75/1 75/4 75/4 86/11 86/15 86/16 86/16 91/20 94/17 106/15 106/16 109/1 147/24 147/24 151/7 151/8 151/8 151/9 151/10 159/28	MORNING'S [1] 80/25
	MILESTONE [1] 37/3	MORRISON [1] 2/14
	MILIBAND [1] 1/19	MOST [6] 13/16 26/8 73/8 76/12 87/9 137/20
	MILITARY [48] 8/7 10/8 10/8 14/4 15/5 15/9 15/16 17/6 18/25 28/25 30/20 30/20 32/24 33/13 33/17 33/23 34/4 34/6 34/23 34/25 37/25 38/18 40/7 40/16 44/15 44/16 48/2 56/14 58/5 59/11 59/17 60/4 70/10 70/24 77/18 81/3 82/22 121/14 133/4 133/9 142/7 144/1 144/18 152/8 158/7 168/21 188/26 198/3	MOTION [2] 34/18 165/20
	MILITARY'S [1] 132/27	MOTOR [3] 84/22 89/9 104/21
	MILLION [9] 89/18 134/11 151/7 151/11 151/11 151/12 158/24 158/28 167/1	MOTORS [1] 166/26
	MIND [6] 15/12 66/2 126/6 128/27 163/26 165/5	MOUNTAIN [2] 100/19 100/19
	MINE [3] 195/24 195/27 198/8	MOUNTED [1] 54/24
	MINIMIZE [1] 170/28	MOUTH [2] 179/28 180/1
	MINOR [2] 7/7 142/5	MOVE [16] 1/27 16/18 30/26 44/14 50/16 55/12 58/27 64/13 79/22 97/27 112/4 138/12 138/15 138/21 139/28 160/16
	MINUS [2] 147/25 195/9	MOVED [2] 20/28 83/1
	MINUTE [12] 33/25 55/19 60/28 90/5 91/22 113/2 174/25 179/11 182/25 193/28 198/15 202/5	MOVES [1] 81/6
	MINUTES [2] 61/7 76/8	MOVING [4] 71/20 155/15 155/21 165/26
	MISS [1] 110/15	MR [5] 2/19 179/21 180/4 180/25 197/10

M	49/22 51/3 56/13 58/13 MUROC-EDWARDS [1] 21/3 MURPHY [2] 54/2 54/3 MURPHY'S [2] 53/28 54/4 MUSEUM [1] 12/11 MUST [2] 47/27 49/12 MUTUALS [1] 2/8 MX [1] 30/20 MY [108] 2/21 3/8 5/5 5/6 7/5 7/6 7/10 7/11 7/22 8/8 8/24 9/16 33/7 39/9 39/10 42/17 46/5 48/15 52/17 53/24 55/15 58/7 66/2 67/17 67/19 67/28 68/19 69/27 70/25 76/2 76/5 78/17 79/3 81/20 90/10 91/17 92/9 92/24 93/19 93/24 93/25 94/6 102/6 102/24 105/5 107/3 109/7 113/8 115/16 115/16 116/8 116/13 116/20 116/22 128/27 129/2 131/27 132/9 138/26 141/3 141/21 143/12 143/16 144/5 144/10 144/22 145/17 145/21 146/16 162/13 162/15 163/22 163/27 165/5 166/9 167/8 169/1 169/2 169/2 170/15 170/15 170/26 176/7 176/23 176/23 179/25 181/11 181/14 183/8 187/15 188/18 189/1 189/27 190/23 192/27 193/11 193/25 194/22 195/21 195/25 196/9 199/3 199/9 199/12 200/6 205/6 205/11 206/8 MYSELF [2] 23/25 69/22	NEIGHBORHOOD [2] 101/15 102/13 NEIGHBORING [1] 92/3 NEIGHBORS [1] 171/2 NEITHER [1] 199/9 NET [1] 77/2 NEVADA [1] 102/2 NEVER [5] 34/14 161/15 161/15 168/25 187/4 NEVERTHELESS [1] 4/11 NEW [29] 13/14 32/13 40/7 63/2 83/25 83/26 83/27 83/28 84/3 85/27 118/15 126/27 129/25 130/6 134/20 134/24 135/10 136/25 137/1 138/15 146/19 146/19 146/20 149/17 150/16 163/4 165/5 176/19 176/20 NEXT [58] 15/6 15/7 16/20 21/7 22/3 23/22 24/22 24/23 26/5 26/23 27/14 27/15 27/18 27/27 28/7 28/15 29/19 31/7 32/8 35/23 35/28 37/7 38/4 44/19 64/23 64/25 70/23 110/23 125/12 127/3 128/9 135/8 135/9 135/16 137/28 139/24 139/26 148/8 149/1 151/17 151/18 152/2 153/6 153/12 156/1 156/6 156/19 157/22 158/14 159/19 159/21 160/15 165/6 190/13 192/10 197/7 205/26 207/20 NEXUS [3] 24/21 31/14 57/11 NIGHT [1] 94/28 NINE [2] 96/27 162/26 NISHIKAWA [2] 173/6 173/11 NO [88] 1/6 1/27 2/28 3/13 3/24 10/14 11/18 14/20 21/20 28/6 29/27 30/24 33/3 33/28 38/21 39/26 40/9 42/21 48/5 48/15 51/21 53/9 53/15 55/16 55/17 57/22 60/6 61/19 61/21 64/8 64/16 78/24 83/10 83/14 87/21 89/11 89/25 92/13 93/22 94/17 97/24 111/28 112/24 116/10 117/17 125/9 125/16 127/9 128/1 128/10 128/13 128/15 128/15 128/22 128/27 129/1 129/7 130/22 130/26 131/27 132/9 132/13 133/16 134/21 135/16 135/17 137/17 138/23 138/23 139/19 150/17 153/23 161/28 172/26 177/8 187/2 187/8 189/10 192/3 193/13 195/12 198/1 198/11 203/16 206/3 206/5 206/8 208/7 NOBODY [2] 199/8 199/21 NOISE [8] 62/28 62/28 63/5 63/9 91/3 91/14 92/8 93/16 NON [1] 151/26 NON-APPROPRIATED [1] 151/26 NONE [1] 161/13 NONEXCLUSIVE [3] 96/23 97/4 110/13 NONSUPERSONIC [1] 100/14 NONTTEST [1] 82/23 NOON [2] 112/26 113/26 NORMAL [2] 96/24 102/25 NORMALLY [1] 75/12 NORTH [20] 19/24 35/1 69/3 69/15 69/16 109/1 118/3 118/23 118/24 118/26 118/28 119/8 141/4 148/7 154/15 156/26 157/19 157/20 158/15 160/20 NORTHEAST [1] 148/6 NORTHROP [10] 16/24 16/28 17/2 17/8 18/7 18/14 23/24 32/10 40/21 40/23 NOSE [6] 26/10 26/11 26/20 89/7 89/24 89/25 NOT [216] NOTE [2] 17/11 27/8 NOTES [3] 61/5 193/25 193/28 NOTHING [5] 5/16 65/5 94/17 138/4 140/25 NOTICE [5] 26/13 85/15 162/13 163/21 179/9 NOTWITHSTANDING [2] 39/9 186/23 NOW [94] 4/21 5/15 8/13 11/21 19/13 19/22 21/17 25/5 26/10 26/13 44/8 49/12 51/5
MR. [104] 1/19 1/25 2/1 2/3 2/5 2/14 2/16 2/24 2/26 3/3 3/6 3/9 3/9 4/5 4/6 4/19 5/21 5/24 30/23 38/24 40/25 52/26 53/3 53/19 61/5 61/15 65/19 66/9 74/13 111/4 111/17 114/12 114/14 119/21 124/9 124/11 138/17 141/15 142/16 147/10 149/4 149/13 149/17 149/21 150/15 156/24 160/16 161/14 161/16 161/18 161/18 162/5 162/20 162/26 163/2 164/20 165/12 166/4 171/8 177/20 179/7 179/22 179/28 180/16 180/20 180/21 181/10 181/10 182/10 182/15 183/12 183/16 183/20 184/14 185/8 187/7 187/9 187/13 188/9 188/19 188/19 190/24 190/24 192/4 192/10 192/15 194/14 194/20 194/26 195/1 196/3 197/6 197/17 198/27 198/28 200/7 201/7 201/9 201/26 202/28 203/3 205/7 205/8 205/17 MR. BREWER [1] 205/17 MR. BREWER'S [2] 149/17 161/18 MR. CLARENCE [1] 181/10 MR. DIORIO [13] 181/10 182/10 182/15 183/16 183/20 184/14 187/7 187/9 188/19 194/26 195/1 196/3 205/7 MR. DIORIO'S [2] 190/24 194/20 MR. DUBOIS [3] 66/9 111/17 114/12 MR. FIFE [1] 2/5 MR. HALLION [1] 52/26 MR. HALLION'S [1] 5/24 MR. HERBERT [2] 3/3 3/9 MR. HERBERT'S [2] 2/3 3/9 MR. JOE [2] 180/21 194/14 MR. JOYCE [2] 2/14 40/25 MR. JUDKINS [23] 119/21 124/11 141/15 142/16 147/10 149/13 156/24 160/16 161/16 161/18 166/4 177/20 180/20 183/12 185/8 192/10 192/15 197/6 197/17 201/9 201/26 202/28 203/3 MR. JUDKINS' [2] 149/4 161/14 MR. KUHS [18] 2/1 3/6 4/5 53/19 61/5 61/15 111/4 114/14 124/9 138/17 150/15 162/5 162/26 164/20 171/8 192/4 198/27 201/7 MR. KUHS'S [1] 162/20 MR. LEININGER [11] 1/19 2/16 2/24 2/26 4/19 149/21 163/2 165/12 179/7 180/16 188/9 MR. LEININGER'S [1] 179/28 MR. OYARZO [3] 5/21 65/19 74/13 MR. RAND [1] 1/25 MR. SANDERS [2] 188/19 205/8 MR. SANDERS' [1] 190/24 MR. ZIMMER [7] 4/6 30/23 38/24 53/3 179/22 187/13 198/28 MR. ZIMMER'S [1] 200/7 MUCH [42] 20/10 26/19 30/5 39/1 46/11 46/13 50/6 53/17 71/28 83/17 89/14 90/24 109/8 109/12 111/1 113/23 116/1 116/2 135/21 137/3 139/22 139/27 141/6 142/12 146/26 163/20 164/20 166/21 168/5 168/25 169/14 169/18 169/23 169/26 170/3 182/3 182/3 184/4 199/24 201/3 205/22 207/19 MULTIPLE [5] 71/6 80/21 97/7 101/23 128/5 MULTIPLIER [1] 196/28 MUNITION [2] 76/22 77/1 MUNITIONS [1] 54/12 MUROC [36] 13/11 13/25 13/28 14/11 14/12 14/26 15/18 16/7 17/8 17/9 17/14 17/18 18/16 18/19 18/24 18/27 18/27 19/14 19/21 19/25 20/10 20/28 21/3 21/13 21/23 21/24 41/10 41/14 41/17 44/23 47/21 48/6	N NACA [3] 35/5 55/2 56/9 NAF [2] 151/26 151/26 NAME [14] 1/2 5/2 5/5 14/7 14/14 14/17 53/24 56/7 56/8 65/7 114/2 115/3 119/5 140/28 NARRATIVE [1] 55/25 NARROW [1] 40/12 NASA [41] 32/19 33/13 33/14 33/16 33/19 34/2 34/6 34/14 34/16 34/23 34/25 35/11 35/14 35/18 54/6 54/7 54/15 54/21 55/1 55/5 56/2 56/4 56/5 56/9 56/16 56/18 57/1 81/1 81/2 81/6 81/12 81/12 82/8 118/7 118/8 118/9 118/13 121/8 121/27 156/20 157/18 NASA-AIR [1] 55/5 NATION [4] 13/22 58/3 107/16 125/22 NATION'S [1] 77/21 NATIONAL [15] 7/17 9/5 10/1 12/10 28/23 28/24 33/19 56/6 56/7 64/6 69/12 70/26 98/27 129/27 136/21 NATIONWIDE [1] 59/12 NATURAL [4] 1/14 86/25 146/1 151/10 NATURE [11] 9/15 83/15 83/26 99/13 99/13 99/23 130/7 139/12 139/13 164/26 205/21 NAVY [3] 23/7 101/23 108/27 NAZI [1] 20/14 NEAR [5] 14/24 112/19 131/3 157/26 169/25 NEAT [1] 163/27 NECESSARILY [4] 40/27 68/17 137/6 148/23 NECESSARY [3] 100/25 165/25 191/18 NEED [46] 15/12 16/3 34/19 39/14 45/19 46/6 58/6 74/11 88/25 91/16 99/12 101/1 101/1 102/15 104/18 106/4 106/6 107/7 107/8 107/17 112/16 113/5 135/2 137/7 137/9 139/7 154/9 157/6 157/8 160/6 160/6 160/13 168/21 168/22 171/5 179/3 179/10 179/12 182/11 194/9 196/24 197/1 197/2 197/3 200/3 200/4 NEEDED [7] 11/14 13/22 17/3 17/8 43/20 44/10 186/17 NEEDS [13] 28/25 44/16 64/5 112/22 131/25 176/15 177/26 177/26 178/4 178/6 178/12 187/4 192/1 NEIGHBOR [1] 171/5	

N		
NOW... [81] 54/24 55/8 64/12 65/3 66/19 67/3 67/10 70/28 71/6 73/26 79/5 79/27 80/2 80/9 81/5 82/6 82/10 82/15 82/17 82/19 85/6 85/15 86/11 86/16 93/1 95/18 96/16 97/6 97/10 99/7 99/9 99/24 100/7 102/16 104/27 105/16 106/2 106/5 106/19 107/4 108/2 109/5 109/7 109/26 126/25 128/27 129/7 129/12 129/15 129/22 129/23 129/28 130/3 130/4 130/4 130/9 130/21 130/25 133/22 133/25 135/5 135/13 137/16 137/26 139/20 140/23 144/25 144/26 152/25 153/25 157/23 162/17 163/9 169/23 173/19 182/17 183/5 189/12 190/14 196/1 206/14	NOZZLES [3] 81/15 81/19 82/6	NUMBER [91] 3/10 1/1 1/15 3/2 3/5 3/5 5/26 6/7 6/12 6/13 6/15 6/16 11/9 12/2 19/23 37/16 57/10 57/28 58/26 60/21 60/24 63/12 67/5 67/13 67/25 68/2 68/12 74/2 74/4 74/23 75/7 84/27 85/11 90/15 93/25 93/25 95/27 96/14 98/7 101/14 107/23 107/24 114/1 116/6 116/19 116/20 116/21 121/2 122/4 122/12 140/11 141/5 141/12 148/13 149/7 149/18 149/25 149/27 151/15 151/22 152/4 152/8 152/12 152/13 153/27 154/3 159/10 171/1 174/19 179/28 180/2 180/24 185/6 189/18 193/19 194/7 194/14 194/21 194/26 195/13 196/3 196/15 197/6 199/8 200/1 200/2 200/27 201/18 204/11 204/26 206/20
NUMBER 1 [5] 93/25 93/25 107/23 140/11 152/12	NUMBER 17 [1] 159/10	NUMBER 2 [2] 107/24 152/13
NUMBER 3 [4] 6/12 6/13 6/16 197/6	NUMBER 4 [1] 201/18	NUMBER 40790 [1] 67/25
NUMBER 43913 [1] 149/25	NUMBER 43968 [1] 116/6	NUMBER 44001 [1] 96/14
NUMBER 51900 [1] 74/2	NUMBER 51905 [1] 75/7	NUMBER 5674 [1] 149/27
NUMBER 8 [1] 141/12	NUMBERS [23] 16/23 22/9 58/4 64/20 99/22 140/19 152/23 153/14 153/16 171/12 173/2 173/3 181/16 183/21 185/14 193/4 193/7 196/19 199/17 201/15 201/27 202/8 202/20	NUMEROUS [3] 25/18 143/12 146/21
O		
O'CLOCK [7] 96/26 96/26 97/22 97/23 113/10 113/13 113/24	OAKLAND [1] 75/19	OASIS [1] 170/23
OATH [2] 114/11 122/16	OB [1] 52/23	OBJECT [5] 124/3 149/3 152/11 165/9 177/6
OBJECTED [1] 187/1	OBJECTING [1] 165/4	OBJECTION [51] 2/22 3/22 3/24 3/28 4/8 10/15 10/26 15/25 15/27 30/23 33/24 33/26 33/28 51/15 51/17 51/23 52/25 59/23 59/28 60/8 64/15 83/11 111/6 111/26 131/23 132/2 161/12 163/25 169/21 170/6 170/7 174/12 174/25 175/6 177/13 179/21 179/25 180/13 180/13 180/15 181/21 184/28 185/1 185/5 186/26 187/3 187/14 195/26 198/12 199/12 200/8
OBJECTIONS [3] 52/28 179/14 179/20	OBSERVE [4] 109/14 109/21 109/22 109/26	OBSERVED [1] 148/24
		OBSTRUCTIONS [1] 25/24
		OBTAIN [1] 54/17
		OBTAINED [1] 143/16
		OBVIOUS [2] 39/20 166/19
		OBVIOUSLY [11] 70/13 71/27 72/10 77/20 98/12 99/4 100/13 101/19 105/27 127/13 200/13
		OCCASION [2] 51/25 185/23
		OCCUPATION [1] 144/22
		OCCUPIED [2] 52/21 144/24
		OCCUR [1] 92/21
		OCCURRED [1] 206/23
		OCCURS [2] 163/9 207/10
		OCTOBER [3] 21/13 21/26 21/26
		OCTOBER 14 [1] 21/13
		OCTOBER 1946 [1] 21/26
		OCTOBER 1947 [1] 21/26
		ODD [1] 76/15
		OFF [28] 14/23 15/10 18/27 25/9 25/23 26/21 28/1 37/1 58/25 74/12 77/2 82/7 84/20 84/23 89/10 90/2 91/4 100/27 101/4 101/26 102/18 103/12 103/17 107/18 129/26 133/22 134/25 160/27
		OFF-BASE [1] 58/25
		OFFER [6] 12/17 42/25 51/21 73/16 124/8 147/9
		OFFERED [2] 19/3 199/21
		OFFICE [12] 1/17 2/12 2/14 3/10 9/20 12/12 76/2 76/5 134/10 167/8 167/9 167/10
		OFFICER [16] 69/7 71/4 71/18 114/28 143/6 143/7 143/8 143/14 143/22 143/24 143/26 144/2 144/6 144/9 144/12 184/8
		OFFICERS [10] 70/12 70/19 70/28 71/1 71/1 71/3 143/9 143/10 143/11 144/4
		OFFICES [1] 35/20
		OFFICIAL [5] 2/28 67/28 126/27 208/11 208/23
		OFFICIALLY [1] 49/9
		OFFSHORE [1] 58/25
		OFTEN [2] 39/8 104/17
		OFTENTIMES [1] 172/26
		OH [10] 28/20 60/15 82/25 103/1 114/24 136/8 149/1 151/18 153/15 157/3
		OHIO [3] 41/26 49/11 49/17
		OILED [1] 28/12
		OKAY [76] 6/2 7/3 15/7 25/8 39/13 72/9 73/10 77/18 79/9 79/17 87/5 88/9 88/10 88/17 90/17 94/19 95/3 95/15 98/9 103/5 105/11 106/4 107/6 108/4 110/5 111/17 111/25 113/2 113/21 115/12 116/17 116/24 117/9 118/9 118/17 120/7 124/26 126/10 129/21 132/13 132/23 139/5 139/25 142/28 145/4 146/10 147/23 148/21 149/2 156/7 157/5 160/18 165/27 170/10 171/24 173/5 174/16 175/23 177/12 177/24 179/4 181/2 182/5 183/10 183/12 187/18 187/22 194/18 195/5 196/26 197/5 204/7 204/16 204/20 206/12 207/15
		OLD [7] 35/27 35/27 85/21 85/24 94/13 94/15 94/15
		OLDER [2] 13/6 33/19
		ON THE [1] 109/17
		ONCE [8] 28/9 31/14 31/25 32/9 36/24 59/14 79/10 156/28
		ONE [103] 5/25 5/25 5/26 15/9 17/1 18/27 21/22 22/13 25/6 25/12 26/8 27/22 32/28 33/4 33/17 36/4 37/13 39/6 40/5 44/24 46/24 48/20 49/16 55/12 56/24 57/20 58/14 62/10 62/16 65/14 66/20 67/13 68/19 69/21 75/4 75/17 76/2 78/16 78/28 84/2 84/16 84/18 84/22 86/27 90/9 91/12 91/15 94/22 95/11 95/13 96/11 97/13 97/14 97/15 100/9 101/11
		101/13 101/13 102/27 105/27 107/9 107/11 113/2 113/8 113/11 113/21 115/24 116/12 116/13 116/15 118/16 119/15 120/18 121/27 122/8 122/21 123/8 128/6 128/13 128/15 128/15 133/7 133/28 134/6 135/22 135/24 138/6 142/5 145/14 147/21 149/22 150/4 153/6 153/6 160/2 160/2 163/9 171/13 171/14 173/1 176/20 194/5 197/15
		ONE-OFF [1] 18/27
		ONEROUS [1] 63/8
		ONES [4] 83/28 105/18 122/12 140/2
		ONLY [24] 1/16 4/13 4/14 4/14 4/15 5/24 18/14 21/22 29/3 36/25 63/21 66/17 79/9 84/18 87/6 90/23 95/16 111/22 112/27 121/26 122/1 122/24 158/28 160/9
		ONSET [1] 42/1
		ONWARDS [2] 8/17 59/13
		OOPS [1] 155/25
		OP [2] 63/14 79/19
		OPEN [12] 13/7 13/23 19/7 25/26 28/6 31/24 40/10 44/28 45/3 45/4 93/14 105/17
		OPERATE [15] 21/19 44/25 45/5 70/12 70/20 71/2 71/5 91/23 92/7 96/21 96/22 97/4 98/18 109/6 146/5
		OPERATED [3] 17/15 36/26 119/7
		OPERATES [1] 96/21
		OPERATING [6] 15/10 20/9 43/15 43/16 97/7 109/7
		OPERATION [7] 70/17 73/7 81/1 109/20 145/27 146/28 163/13
		OPERATIONAL [20] 11/9 13/2 19/15 22/22 27/24 47/24 70/12 70/18 71/8 73/7 73/8 82/27 122/7 126/17 126/17 126/21 126/23 126/23 126/25 167/3
		OPERATIONALLY [1] 32/4
		OPERATIONS [18] 13/25 20/13 24/15 34/23 45/17 45/19 51/3 63/15 70/21 70/22 73/17 78/9 78/11 78/23 78/28 86/28 87/1 190/22
		OPERATIVE [1] 94/22
		OPERATORS [1] 15/8
		OPINE [1] 174/27
		OPINING [1] 10/17
		OPINION [25] 4/13 19/1 34/14 38/15 63/17 105/25 176/7 177/7 180/7 180/8 182/22 184/3 186/16 187/10 187/15 191/26 191/27 194/18 194/22 195/8 196/3 200/8 205/6 205/10 205/11
		OPINIONS [5] 30/25 34/2 34/13 205/7 205/9
		OPPORTUNITIES [1] 27/13
		OPPORTUNITY [3] 52/27 161/16 164/13
		OPPOSED [3] 71/8 71/10 152/27
		OPTIMUM [1] 54/17
		ORDER [19] 71/26 88/26 88/26 96/2 99/12 99/19 105/4 105/9 124/10 126/8 127/6 128/6 137/7 162/11 162/12 171/10 171/13 197/7 199/25
		ORDERS [2] 122/15 171/12
		ORDNANCE [7] 54/19 54/21 54/24 55/9 55/10 145/13 145/14
		ORGANICS [1] 2/5
		ORGANIZATION [11] 33/19 54/7 120/4 120/27 121/4 121/11 121/12 121/14 121/20 145/8 168/21
		ORGANIZATIONAL [3] 32/20 67/2 120/26
		ORGANIZATIONS [2] 73/3 122/13
		ORGANIZING [1] 186/4
		ORIENT [1] 86/18
		ORIENTATION [1] 75/22
		ORIGINAL [2] 2/28 31/20
		ORIGINALLY [6] 14/10 22/19 40/2 40/14

O	P	PENNED [1] 17/11
ORIGINALLY... [2] 41/25 163/3	P-59 [1] 20/1	PEOPLE [37] 16/15 17/24 17/28 19/13
ORIGINATED [1] 54/4	P-80 [1] 41/14	19/22 25/25 28/13 35/19 40/10 42/15 43/3
OTHER [49] 11/18 11/19 12/8 12/9 18/11	P-A-U-L [1] 5/6	43/8 46/28 47/14 47/18 56/12 56/12 57/25
20/2 20/16 22/2 23/5 25/25 35/1 49/22 50/7	P.A.A [15] 177/2 178/10 178/13 178/14	58/1 58/11 58/12 58/13 58/15 58/24 58/26
52/5 53/15 54/27 76/9 78/14 82/22 90/27	178/25 181/5 184/5 184/26 185/3 187/25	63/8 99/11 104/3 106/28 136/23 145/6
92/13 92/15 92/18 94/20 99/5 99/11 99/28	188/7 188/13 189/17 191/18 194/16	151/15 151/23 152/24 153/18 157/28 181/22
100/4 102/26 102/27 105/24 107/24 108/6	P.M [2] 113/27 114/6	PEOPLE WHO [1] 43/3
110/13 115/13 119/15 121/19 121/22 129/1	P.M.E [4] 69/6 70/6 70/9 70/24	PEOPLE'S [1] 46/26
135/20 144/17 164/17 164/27 168/28 172/28	P.T [1] 161/4	PER [5] 38/4 124/18 169/8 169/9 178/7
176/21 181/22 193/1 206/25	PACIFIC [2] 37/2 136/27	PERCENT [27] 124/2 124/15 124/16 124/18
OTHERS [3] 9/15 65/27 83/27	PAGE [15] 1/7 6/15 48/16 48/23 48/27 51/1	171/19 171/19 171/20 188/27 189/5 189/24
OTHERWISE [3] 77/16 131/26 185/14	51/2 114/7 123/24 124/28 129/14 131/16	190/14 190/17 190/20 190/27 190/28 194/5
OUGHT [2] 164/2 195/9	148/18 148/18 149/2	194/10 195/14 195/16 196/27 204/16 204/19
OUR [86] 1/28 39/15 44/6 48/21 61/6 63/27	PAGE 16 [1] 51/2	204/21 205/3 205/14 206/4 206/7
70/19 74/27 75/26 77/2 77/25 77/25 77/28	PAGE 35 [2] 48/23 48/27	PERCENTAGES [1] 122/28
78/26 78/27 79/25 81/8 85/5 86/21 87/2	PAGE 37 [1] 51/1	PERCEPTION [1] 88/15
88/21 90/10 90/25 93/25 94/10 96/21 97/1	PAGE 41 [1] 129/14	PERFECTLY [2] 27/6 27/6
97/8 97/8 99/14 99/20 101/9 101/17 101/27	PAGE 45 [1] 131/16	PERFORMANCE [3] 43/23 63/1 122/20
102/10 102/11 105/16 105/17 105/18 106/19	PAGES [1] 208/14	PERHAPS [5] 26/7 29/28 41/8 41/12 41/26
106/19 107/27 107/28 112/26 113/20 119/21	PAINT [1] 155/19	PERIMETER [1] 95/4
122/2 125/23 130/28 134/6 146/17 146/23	PAINTED [1] 28/12	PERIMETERS [1] 63/19
147/6 147/7 149/19 154/25 155/16 156/4	PALLETS [1] 76/24	PERIOD [15] 10/5 13/12 18/16 18/20 35/8
156/11 158/16 158/19 158/24 158/26 158/26	PALMDALE [5] 23/26 23/27 23/28 24/5	45/21 48/6 81/11 107/21 108/19 113/14
159/2 160/13 160/20 161/2 167/23 167/25	102/20	173/10 174/22 175/18 195/15
168/10 168/14 168/16 170/17 171/2 171/23	PANDA [1] 167/18	PERIPHERY [1] 64/4
178/23 178/27 179/1 182/16 188/22 188/23	PANELS [1] 89/8	PERMANENT [1] 20/6
190/26 205/12 205/22 206/13	PANHANDLE [3] 67/8 93/8 106/12	PERMANENTLY [1] 9/9
OURS [3] 116/11 168/17 205/28	PAPER [2] 173/14 196/5	PERMISSIBLE [1] 6/5
OUT [74] 9/8 16/23 20/16 26/20 27/10 36/14	PAPERS [1] 43/9	PERSON [3] 142/11 142/12 180/4
46/26 46/28 50/21 69/2 69/3 69/7 69/8 69/9	PARAMETERS [1] 43/22	PERSONAL [1] 54/20
70/27 71/7 71/9 71/27 72/20 72/24 74/17	PARDON [1] 119/28	PERSONNEL [7] 13/28 34/25 56/15 57/27
74/21 76/24 77/7 78/10 78/12 80/3 81/15	PARK [4] 109/11 119/18 119/23 126/20	59/18 60/4 93/28
85/23 86/17 90/3 90/11 91/18 91/19 93/15	PARKER [1] 2/3	PERSPECTIVE [9] 9/27 14/9 39/12 75/6
94/2 102/4 102/10 102/19 102/20 102/20	PARKING [2] 109/10 161/1	75/10 75/24 86/14 93/22 101/18
102/22 104/27 109/12 112/17 112/19 112/23	PARLANCE [1] 105/11	PHASE [5] 206/19 206/21 206/22 206/26
119/8 119/9 122/27 125/5 131/11 131/13	PART [25] 60/15 67/1 70/26 74/15 74/18	207/13
132/7 132/19 133/23 135/7 145/15 155/7	77/12 82/16 86/25 88/23 89/23 121/8 121/19	PHELAN [1] 1/19
155/25 156/16 156/16 156/22 157/4 162/26	122/1 122/2 122/3 126/24 130/28 158/5	PHONE [2] 92/28 93/3
163/22 179/28 179/28 191/24 194/12 196/15	158/6 159/13 159/15 159/23 162/13 170/15	PHONETIC [3] 19/28 89/23 93/3
203/10 204/11 204/26	185/17	PHOTO [26] 15/6 15/7 15/21 16/20 18/2
OUTAGES [1] 145/23	PARTIAL [1] 207/13	21/7 21/8 21/9 22/3 22/5 22/6 22/14 22/15
OUTBREAK [1] 59/14	PARTICIPATING [1] 21/4	23/24 23/25 24/9 24/10 29/28 33/11 36/7
OUTCOME [1] 164/22	PARTICULAR [11] 3/20 10/10 15/23 36/11	36/8 36/9 36/11 36/13 76/2 92/22
OUTLINE [1] 45/7	58/14 129/16 147/12 149/26 172/27 173/1	PHOTOGRAPH [7] 12/9 12/26 12/27 15/23
OUTLOOK [1] 131/21	202/1	17/20 26/11 85/12
OUTRANKS [1] 115/1	PARTICULARLY [6] 8/5 9/14 35/8 39/4	PHOTOGRAPHS [8] 11/22 11/26 12/9
OUTSET [1] 199/14	89/24 100/21	12/16 12/22 163/17 163/20 164/26
OUTSIDE [3] 134/15 152/13 162/4	PARTIES [1] 1/16	PHOTOS [10] 5/26 22/10 26/23 62/1 89/28
OVER [63] 11/8 11/11 11/20 13/11 14/5	PARTNERS [1] 37/1	153/28 154/4 161/13 162/19 165/28
14/19 15/4 17/25 20/9 22/21 22/28 26/1 27/1	PARTNERSHIP [6] 23/10 23/12 32/18	PHRASE [3] 84/13 103/5 125/19
27/10 31/16 32/13 36/21 37/2 37/10 39/25	33/12 57/11 168/14	PHRASES [1] 57/10
40/10 45/5 45/17 45/18 45/18 46/2 47/8	PARTS [4] 85/23 90/5 169/8 169/8	PHYSICAL [2] 74/10 109/25
66/18 75/1 75/3 75/4 76/6 76/7 76/10 87/8	PARTY [1] 13/27	PHYSICALLY [3] 2/9 109/28 117/22
92/28 100/6 100/7 100/8 100/12 100/16	PASSAGE [2] 111/12 129/13	PHYSICS [1] 79/22
100/22 101/22 102/12 102/14 102/22 102/23	PASSED [1] 193/11	PICK [1] 148/8
108/10 110/23 118/20 127/10 127/26 128/8	PASSENGER [1] 32/25	PICNIC [1] 158/2
146/27 155/17 162/26 166/10 170/25 171/6	PASSENGERS' [1] 25/15	PICTURE [16] 13/10 13/11 15/17 23/23
171/18 171/20 175/25 195/15	PAST [11] 28/16 29/26 90/26 108/10 127/26	28/21 35/25 80/13 85/3 90/9 109/2 142/9
OVERALL [2] 179/2 179/3	127/27 136/20 137/24 147/4 147/19 172/28	146/18 154/8 156/3 157/23 163/25
OVERHEAD [1] 27/9	PATTERN [4] 11/20 41/3 46/19 176/5	PICTURES [4] 12/18 156/18 163/26 164/4
OVERRULE [4] 3/22 31/5 51/23 177/12	PATTERSON [1] 143/13	PIECE [7] 66/21 80/17 96/24 99/17 101/17
OVERRULED [5] 83/13 132/3 186/26	PAUL [2] 3/3 5/5	106/12 196/5
187/14 200/7	PAUSE [20] 25/6 26/25 48/25 52/8 52/26	PIECES [1] 105/20
OVERSEAS [4] 96/19 102/23 128/1 128/2	53/13 61/2 110/19 150/6 150/13 173/23	PILE [1] 141/16
OVERSIGHT [3] 8/24 8/27 146/27	192/7 196/13 198/20 198/25 202/13 203/22	PILOT [21] 9/27 14/14 21/16 26/17 69/8
OVERSTATEMENT [1] 205/15	204/2 204/9 204/24	73/6 73/8 73/8 81/10 88/21 88/22 88/27 89/5
OVERVIEW [4] 10/23 57/17 116/28 117/5	PAVE [3] 45/13 45/15 45/16	104/19 107/4 157/7 157/10 157/11 157/12
OWN [8] 79/3 79/26 82/17 86/21 162/20	PAY [4] 48/15 79/6 79/6 79/10	189/2 189/2
182/16 195/21 195/25	PAYLOADS [1] 29/3	PILOTED [1] 31/11
OXYGEN [1] 29/11	PEDESTAL [1] 160/26	PILOTS [4] 9/28 13/16 13/17 17/16
OYARZO [4] 2/19 5/21 65/19 74/13	PENDING [3] 5/15 65/3 140/23	PINON [1] 1/19
		PINPOINT [1] 162/17

P		
PIPE [1] 158/26	129/19 139/2 147/7 207/9	PRIORITIES [1] 131/11
PIPELINE [1] 166/6	POSSIBLY [1] 54/18	PRISTINE [1] 68/18
PIPES [1] 170/19	POST [2] 21/3 50/4	PRIVATE [1] 18/11
PIPING [1] 170/14	POSTDATE [1] 149/19	PRIVILEGE [2] 111/9 111/15
PITCH [1] 35/9	POSTED [1] 149/19	PROBABILITY [1] 168/25
PITCH-UP [1] 35/9	POTABLE [4] 124/2 124/14 158/22 159/4	PROBABLY [24] 30/15 39/11 46/16 46/24
PIVOTAL [1] 47/5	POTENTIAL [12] 48/7 64/2 92/3 105/25	55/9 67/19 72/9 89/11 95/13 95/19 95/20
PLACE [16] 11/18 15/3 17/25 21/22 29/3	110/9 110/10 111/10 111/14 178/11 179/3	96/2 98/7 108/18 109/16 109/23 110/4
49/22 50/1 60/20 60/23 91/3 93/6 119/2	192/1 199/2	119/22 128/16 137/21 147/27 179/8 186/1
119/23 126/20 126/20 129/1	POTENTIALLY [5] 47/5 63/14 106/5 135/1	204/18
PLACED [1] 13/1	199/4	PROBLEM [10] 27/23 35/9 35/10 62/28
PLACES [3] 96/4 119/21 128/5	POUND [3] 41/6 55/6 55/10	63/17 67/17 69/23 91/17 150/18 162/15
PLAINTIFF [2] 1/14 1/17	POUNDS [3] 29/15 41/8 86/10	PROBLEMS [6] 16/1 35/7 66/8 199/28
PLAINTIFF'S [1] 3/2	POWER [11] 30/22 30/22 77/23 77/24 88/3	200/1 200/2
PLAN [10] 72/2 122/19 122/20 122/22	88/4 88/12 88/13 88/16 125/7 126/3	PROCEDURE [2] 89/11 89/23
130/16 130/23 130/24 130/27 131/2 131/3	POWERPOINT [2] 150/18 161/18	PROCEDURES [3] 78/28 97/2 97/8
PLANE [12] 13/10 18/9 18/23 27/1 36/1	PRACTICE [1] 41/6	PROCEED [2] 114/15 141/7
36/3 39/17 87/21 136/25 136/26 137/1 180/5	PRECEDING [1] 203/8	PROCEEDINGS [20] 1/10 48/25 52/8 53/13
PLANES [5] 14/5 14/18 39/6 45/24 87/26	PRECISE [2] 60/21 60/24	61/2 110/19 150/6 150/13 173/23 192/7
PLANNED [1] 138/25	PRECISELY [1] 38/8	196/13 198/20 198/25 202/13 203/22 204/2
PLANNING [16] 71/13 71/18 73/19 105/23	PREDATES [1] 33/18	204/9 204/24 207/24 208/15
112/11 130/14 131/7 131/13 132/5 132/10	PREDATOR [1] 119/6	PROCESS [11] 43/2 55/14 55/15 66/6
132/18 133/8 134/18 136/14 138/20 146/15	PREDECESSORS [1] 49/13	126/16 126/24 132/27 133/2 161/22 164/8
PLANS [1] 126/28	PREDICT [1] 112/21	165/13
PLANT [31] 10/17 10/17 22/12 22/17 22/19	PREDOMINANTLY [2] 52/11 52/19	PROCESSED [1] 101/6
23/2 23/4 23/8 23/9 23/14 23/18 24/1 24/3	PREFACE [1] 188/10	PROCESSES [1] 79/11
24/5 24/12 24/14 24/15 24/18 31/15 31/15	PREFER [3] 97/15 107/19 164/15	PRODUCE [3] 158/28 162/11 163/1
52/11 52/16 52/18 57/9 57/18 102/22 146/3	PREJUDICE [2] 164/12 165/16	PRODUCED [17] 2/9 2/9 23/6 24/2 58/3
146/24 154/25 158/18 158/23	PREMIER [2] 15/9 17/1	161/13 161/14 161/26 161/27 162/23 163/6
PLANT 42 [7] 10/17 10/17 23/14 24/1 24/18	PREPARATION [2] 59/9 70/12	178/27 178/28 180/22 180/25 186/9 188/16
52/18 57/18	PREPARE [9] 2/12 6/19 6/19 13/22 68/10	PRODUCING [1] 186/8
PLAY [3] 41/10 41/17 41/18	71/3 71/13 139/8 192/25	PRODUCTION [18] 23/1 23/5 23/14 24/18
PLAYED [1] 35/5	PREPARED [7] 2/12 3/8 45/20 71/2 163/21	79/14 80/3 147/5 149/14 161/24 162/15
PLEASE [53] 4/22 5/3 5/12 5/21 6/7 6/13	182/20 192/25	171/19 172/16 172/21 175/24 175/25 175/28
10/28 12/8 22/3 23/22 26/6 28/20 31/7 32/8	PREPARES [1] 71/15	184/1 205/24
33/25 35/28 61/14 64/27 65/1 65/7 65/8	PREPARING [3] 104/10 145/21 145/24	PRODUCTS [1] 2/10
65/23 66/14 67/15 67/27 69/26 74/9 80/12	PRESENCE [1] 56/11	PROFESSIONAL [6] 7/21 7/22 8/11 70/10
80/28 91/10 103/14 136/11 141/1 148/8	PRESENT [20] 2/18 1/18 11/4 15/13 22/1	70/23 144/1
151/4 151/17 152/2 153/13 153/16 156/6	24/20 24/21 29/20 34/20 35/21 56/2 63/19	PROFESSIONALLY [1] 31/10
156/19 157/22 158/14 160/15 172/3 172/6	111/10 127/18 129/3 129/10 147/5 174/10	PROFFERED [1] 149/12
173/4 174/15 175/17 177/17 179/5 191/14	175/18 202/18	PROFFERS [1] 10/7
195/22	PRESENTATION [3] 3/11 150/18 161/19	PROFILE [1] 93/19
PLENTY [1] 86/17	PRESENTED [9] 41/22 51/20 120/23	PROFILES [1] 92/10
PLOT [1] 166/23	150/19 152/12 152/19 161/19 163/28 200/26	PROFIT [3] 52/12 52/16 52/20
PLOWED [2] 77/7 77/9	PRESERVE [6] 106/23 107/1 112/16 128/19	PROFOUND [1] 24/17
PLUS [4] 126/22 147/24 190/28 195/14	137/9 139/7	PROGNOSIS [1] 176/20
POINT [34] 8/16 14/3 15/12 23/21 42/3	PRESERVED [1] 106/11	PROGRAM [46] 7/15 7/17 35/17 41/14
70/13 77/3 81/19 84/19 84/21 99/5 103/1	PRESIDENT [5] 59/13 122/15 124/11	41/19 41/22 41/24 41/24 42/2 42/4 54/23
111/14 116/16 124/7 127/19 130/14 132/3	124/13 171/11	55/3 55/4 55/5 56/22 56/24 57/1 79/28 80/1
138/26 155/25 156/16 156/16 161/20 163/15	PRESIDENT'S [1] 171/24	84/3 84/4 88/22 88/23 91/5 110/26 112/19
164/12 165/18 170/19 171/3 176/18 199/19	PRESIDENTIAL [3] 125/2 127/14 171/10	125/28 126/5 134/10 136/20 136/22 137/22
200/4 200/6 200/28 201/2	PRESIDENTS' [1] 207/21	146/15 155/12 156/14 158/5 158/6 168/10
POINTED [4] 33/14 46/26 155/7 162/26	PRESSURE [1] 198/2	170/16 170/28 175/11 175/12 175/14 175/15
POINTER [4] 74/11 117/9 154/10 154/10	PRESSURES [2] 139/9 139/11	175/27 178/23
POLICIES [1] 124/24	PRESUMABLY [1] 52/16	PROGRAM'S [1] 119/8
POLICY [2] 8/1 28/24	PRETTY [7] 73/1 105/8 107/25 128/24	PROGRAMS [11] 8/23 8/26 34/26 34/27
POLITICAL [1] 133/1	146/26 166/21 193/10	35/18 83/19 83/25 119/10 154/19 155/11
POND [3] 157/23 157/25 159/9	PREVENTATIVE [1] 168/10	188/23
POPULAR [2] 42/16 93/8	PREVENTS [1] 64/4	PROGRESS [1] 201/6
POPULATED [1] 62/25	PREVIOUS [8] 37/21 49/21 146/18 185/23	PROGRESSES [1] 25/20
POPULATION [7] 19/9 19/20 19/21 62/18	189/19 189/21 193/25 194/3	PROJECT [2] 168/18 168/20
151/24 152/5 153/10	PREVIOUSLY [6] 4/18 6/2 6/4 65/28 80/15	PROJECTED [2] 180/5 189/16
POPULATIONS [1] 151/20	176/3	PROJECTION [1] 199/10
PORITION [10] 2/22 77/5 78/26 111/2	PRIMARILY [7] 39/17 72/24 73/6 76/7	PROJECTIONS [1] 177/25
154/16 154/22 170/16 175/15 194/6 207/5	80/18 118/22 167/16	PROJECTOR [1] 74/7
PORIONS [1] 30/27	PRIMARY [8] 49/16 67/5 79/24 80/17 90/8	PROJECTS [6] 10/3 32/18 119/9 125/28
POSITION [8] 8/21 66/15 70/4 105/5 105/6	93/1 177/2 178/15	146/22 206/6
145/1 145/2 145/4	PRIME [3] 108/14 119/2 128/28	PROMINENTLY [1] 9/28
POSITIONS [1] 8/15	PRINCIPALLY [1] 206/28	PROMISED [1] 111/15
POSSIBILITY [1] 138/3	PRINCIPLES [2] 71/17 71/17	PROOF [2] 12/17 124/9
POSSIBLE [8] 16/4 76/3 112/21 129/18	PRINTING [1] 9/20	PROPANE [1] 146/2
	PRIOR [11] 51/25 72/15 72/22 73/4 129/13	PROPEL [1] 29/4
	132/1 174/27 175/2 193/4 203/17 206/6	PROPELLANTS [1] 29/10

P	<p> PROPELLER [2] 39/7 83/18 PROPELLERS [1] 39/5 PROPER [2] 182/19 185/7 PROPERLY [1] 163/21 PROPERTIES [2] 1/21 20/28 PROPERTY [2] 52/20 53/8 PROPORTION [1] 75/2 PROPOSAL [1] 179/2 PROPOSE [1] 165/3 PROPOSITION [1] 199/14 PROPULSION [6] 31/28 80/18 80/20 80/20 118/22 166/27 PROTECT [1] 166/17 PROTECTION [3] 143/14 145/19 145/19 PROTESTED [1] 63/26 PROTOTYPE [1] 18/20 PROVEN [1] 63/20 PROVENANCE [1] 124/4 PROVIDE [14] 3/4 3/5 18/13 71/6 126/2 135/3 136/27 147/2 147/4 151/2 162/9 166/13 166/15 201/14 PROVIDED [9] 3/6 141/28 148/22 148/25 149/5 149/9 149/9 149/16 149/28 PROVIDES [3] 72/23 81/6 91/12 PROVIDING [2] 34/5 145/18 PROXIMITY [4] 46/16 102/26 108/22 110/13 PUBLIC [2] 145/11 195/18 PUBLICATIONS [1] 9/17 PUBLISH [2] 87/2 105/15 PUBLISHED [4] 9/20 9/24 9/26 173/7 PULL [2] 96/13 98/6 PULLED [1] 97/13 PUMP [3] 167/24 168/23 168/28 PUMPED [3] 159/10 167/28 169/17 PUN [1] 40/9 PURCHASE [1] 167/25 PURCHASED [1] 159/5 PURPLE [2] 154/23 158/26 PURPOSE [7] 4/14 13/26 31/23 43/19 63/13 70/28 152/7 PURPOSEFULLY [1] 162/1 PURPOSES [9] 3/1 14/4 31/20 34/6 34/24 40/5 64/6 166/21 184/2 PURSUE [1] 171/21 PUSHER [1] 43/4 PUSHING [1] 109/23 PUT [23] 14/9 37/5 75/7 79/27 85/27 86/11 91/19 99/11 105/19 107/25 109/28 117/16 117/18 131/11 131/13 136/26 137/2 137/18 138/2 179/1 180/9 191/13 201/28 PUTS [1] 89/6 PUTTING [2] 64/2 93/18 PX [1] 148/4 PYLONS [1] 55/6 </p>	<p> QUESTIONS [16] 34/7 34/9 38/21 39/11 53/16 53/26 61/6 61/19 61/21 64/8 112/28 135/17 139/19 150/22 164/21 192/3 QUICK [1] 172/5 QUICKLY [3] 41/27 50/17 87/25 QUIETLY [1] 165/3 QUITE [13] 4/25 27/24 62/26 87/28 89/13 96/19 101/21 104/12 108/8 162/16 176/7 199/24 204/12 QUOTATIONS [1] 3/11 QUOTE [4] 50/21 51/3 111/12 164/8 QUOTED [2] 50/26 57/19 </p>	<p> 174/23 175/8 187/2 187/14 199/12 205/2 REASONABLE [11] 36/25 135/4 137/27 138/3 177/26 187/17 188/4 188/5 191/15 191/27 201/16 REASONABLY [2] 188/6 192/1 REASONING [1] 53/7 REASONS [7] 4/2 41/28 46/24 63/12 133/8 166/20 176/1 RECALL [17] 39/17 40/18 48/8 51/16 54/26 54/26 54/28 56/21 120/22 123/16 125/15 153/22 173/1 185/26 192/17 196/24 197/1 RECEIVE [3] 142/21 142/28 167/23 RECEIVED [10] 7/5 7/10 64/17 64/21 140/20 144/17 144/19 144/20 144/22 193/1 RECEIVES [1] 158/21 RECENT [2] 87/9 153/24 RECENTLY [6] 99/17 102/7 119/4 147/19 161/25 169/7 RECESS [7] 61/10 112/26 113/12 113/24 113/26 179/17 206/13 RECITE [1] 173/28 RECITED [1] 144/16 RECLAIMED [8] 154/24 158/16 158/22 158/22 158/26 159/1 159/3 159/5 RECOGNITIONS [1] 144/17 RECOGNIZE [2] 43/7 141/18 RECOGNIZED [1] 94/2 RECOLLECTION [9] 48/14 54/25 124/24 125/2 125/10 131/25 162/21 193/4 201/15 RECONNAISSANCE [1] 35/3 RECONNOISSANCE [3] 32/27 78/5 98/1 RECONNOISSANCE [1] 31/13 RECORD [14] 1/28 3/23 5/4 16/27 36/11 42/12 42/18 55/14 142/8 153/16 157/17 175/3 186/27 186/28 RECORDS [1] 173/8 RECOVER [4] 28/4 44/26 87/26 105/2 RECOVERED [1] 28/2 RECOVERY [2] 25/13 62/7 RECREATION [2] 94/9 158/13 RECREATIONAL [6] 157/27 158/9 159/24 159/27 160/9 161/3 RECROSS [2] 3/2 138/8 RECROSS-EXAMINATION [1] 138/8 RED [4] 16/10 16/10 87/5 202/1 REDDIX [4] 2/28 1/5 114/5 208/11 REDESIGN [1] 85/24 REDESIGNATED [1] 14/14 REDIRECT [8] 3/2 53/18 61/25 62/10 62/12 135/23 135/24 136/1 REDOING [2] 108/28 109/5 REDUCE [3] 122/28 124/13 171/17 REDUCED [2] 125/3 169/8 REDUCTION [6] 124/1 124/16 124/18 125/7 125/8 171/19 REDUCTIONS [2] 122/23 125/8 REDUNDANCY [2] 168/23 171/4 REFER [1] 6/7 REFERENCE [1] 57/9 REFERRED [2] 2/7 166/28 REFERRING [6] 41/13 57/22 89/26 121/21 134/5 134/13 REFINE [2] 17/7 23/16 REFLECT [2] 6/21 68/22 REFLECTED [1] 30/14 REFLECTIVE [1] 99/20 REFLECTS [1] 150/27 REFRESH [7] 22/16 51/26 125/1 125/10 131/24 190/1 201/14 REFRESHED [1] 124/24 REFRESHES [1] 48/14 REFUEL [1] 126/21 REFUELING [3] 32/25 103/2 103/4 </p>
Q	<p> QUALIFIED [3] 10/19 73/23 147/15 QUALITIES [2] 38/9 44/24 QUALITY [5] 62/27 93/24 160/13 169/5 171/1 QUENCH [3] 29/15 29/16 30/6 QUESTION [43] 18/10 26/26 30/11 38/15 40/19 42/17 44/19 51/21 55/15 55/15 55/23 55/25 58/7 62/10 111/13 111/19 112/5 124/25 125/12 129/2 131/18 131/28 132/13 132/22 135/22 135/25 136/7 138/6 152/18 159/19 159/21 161/16 161/26 169/28 171/9 174/12 184/9 185/7 185/8 188/8 189/14 199/16 199/18 QUESTIONING [2] 51/18 184/16 </p>	<p> R R-2508 [2] 100/1 100/3 R-I-C-H-A-R-D [1] 5/6 RADAR [8] 92/25 92/26 95/25 99/3 99/4 99/5 99/9 99/25 RADIO [4] 18/23 18/23 18/24 101/9 RADIOED [1] 101/9 RAFTING [1] 158/1 RAILROAD [1] 37/28 RAIN [4] 46/10 46/13 46/18 87/10 RAINS [2] 46/1 46/1 RAINS BLOW [1] 46/1 RAISE [2] 5/12 64/28 RAMP [8] 20/7 23/19 151/8 154/18 155/1 155/23 156/5 156/22 RAMPS [1] 156/11 RAMSTEIN [1] 143/21 RAN [1] 102/10 RANCH [2] 2/3 116/20 RAND [1] 1/25 RANGE [40] 27/12 31/16 32/26 36/28 37/2 39/28 40/3 58/16 71/4 71/7 74/16 75/15 75/25 77/15 95/5 96/25 99/25 101/9 101/20 102/1 102/2 102/3 102/10 102/14 103/6 103/9 103/10 103/11 105/11 105/15 105/16 105/21 106/12 106/15 106/16 106/20 106/23 107/1 135/3 145/16 RANGES [6] 100/4 101/11 101/22 102/4 102/23 110/13 RANGING [1] 38/5 RANK [1] 66/15 RANKS [2] 71/4 86/23 RAPIDLY [3] 6/1 15/24 16/3 RARE [2] 100/21 100/23 RATE [1] 85/26 RATES [1] 37/6 RATHER [5] 13/9 108/1 119/3 163/22 164/15 RATINGS [1] 29/14 RATIONALE [1] 53/6 RE [2] 1/4 208/5 REACH [4] 41/18 77/26 136/27 155/6 REACHED [2] 188/15 196/20 READ [11] 2/22 42/9 48/18 129/13 131/16 131/28 152/10 153/15 173/13 174/11 174/14 READILY [1] 50/14 READING [2] 132/4 132/21 READINGS [1] 168/17 READY [2] 87/8 104/6 REAL [5] 48/1 97/9 101/5 101/27 111/14 REALISTIC [1] 112/12 REALIZED [2] 13/21 21/20 REALLY [31] 3/20 11/18 11/18 13/24 19/13 19/22 21/11 31/19 31/20 39/7 40/11 45/16 50/5 51/19 52/13 52/13 77/22 84/9 84/11 85/21 87/28 89/13 90/6 91/11 101/21 105/9 121/26 131/5 138/17 165/25 199/13 REALM [1] 135/7 REAPER [1] 119/6 REASON [10] 13/13 36/13 85/18 91/11 </p>	

R		
REGARD [12] 3/7 10/10 18/8 28/17 30/26 38/15 61/27 137/10 182/27 183/8 199/1 206/25	159/2 178/9 185/27 186/5	155/19 155/22 155/23 155/24 155/25 155/26 155/27 156/8 156/10 156/13 156/15 156/21 156/21 156/22 158/1 158/2 158/3 159/9 160/8 160/21 160/24 161/1 161/2 161/4 161/8 162/17 163/5 164/8 164/23 165/22 165/28 173/20 174/15 175/20 179/19 179/21 179/23 179/26 182/17 183/5 185/11 186/20 191/13 191/24 197/7 197/19 200/28 201/9 203/1 206/13 206/17
REGARDING [4] 171/9 206/26 207/4 207/13	RESEARCH [43] 9/7 9/22 9/26 10/3 11/10 12/13 21/10 32/17 35/1 35/11 35/14 35/22 36/17 41/19 41/22 42/2 55/1 56/13 56/24 79/19 79/20 79/21 79/25 80/5 80/10 80/16 80/17 80/19 81/5 81/7 81/22 82/3 82/4 82/7 82/10 82/19 118/6 118/21 118/22 121/28 148/5 157/18 166/25	RIGHTS [1] 206/26
REGION [3] 2/19 38/11 45/9	RESERVATION [2] 4/1 63/11	RISE [2] 30/13 163/12
REGULAR [1] 185/11	RESERVATIONS [1] 3/27	RISES [2] 47/20 60/17
REGULATIONS [1] 169/5	RESERVE [5] 164/23 183/8 200/28 206/17 206/26	RISK [13] 93/17 188/27 189/6 189/24 190/21 194/5 194/10 195/16 204/19 204/21 205/5 205/11 205/14
REITERATE [1] 149/14	RESERVED [1] 40/3	RISKY [1] 62/23
REITERATION [1] 138/18	RESIDE [1] 154/19	RMR [2] 2/28 208/23
REJOINED [1] 102/21	RESOLVING [1] 35/6	ROAD [4] 58/1 76/8 146/21 157/13
RELATE [2] 30/27 70/3	RESOURCE [1] 123/27	ROADS [4] 28/11 66/25 151/8 157/5
RELATED [4] 9/17 54/16 96/10 111/10	RESOURCES [1] 1/15	ROBERT [2] 2/3 53/25
RELATES [1] 41/21	RESOURCING [1] 78/25	ROBUST [1] 175/10
RELATION [1] 56/22	RESPOND [3] 2/25 132/21 200/15	ROCK [1] 2/10
RELATIONS [1] 69/4	RESPONDING [1] 59/12	ROCKET [17] 29/2 29/7 29/17 29/25 30/1 30/4 30/15 60/12 60/19 60/22 72/18 80/18 80/20 80/20 80/22 118/22 166/26
RELATIONSHIP [6] 33/16 57/10 57/17 57/27 122/10 156/25	RESPONSE [6] 23/1 33/27 58/28 112/4 132/2 162/2	ROCKETS [1] 176/9
RELATIVE [1] 92/3	RESPONSES [1] 1/12	RODRIGUEZ [1] 14/10
RELATIVELY [5] 11/11 13/23 57/26 99/16 122/13	RESPONSIBILITIES [2] 152/17 186/8	ROGERS [2] 60/18 148/6
RELAY [1] 101/4	RESPONSIBILITY [1] 145/21	ROLE [3] 35/5 115/13 115/13
RELEVANT [1] 60/1	RESPONSIBLE [8] 66/21 72/13 145/13 145/18 145/27 146/5 146/15 186/3	ROLLED [1] 133/25
RELIED [2] 4/12 187/6	RESPONSIVE [1] 184/9	ROOM [4] 86/17 94/17 104/12 105/19
RELIEF [1] 164/28	REST [8] 9/16 27/21 61/16 61/18 61/20 61/22 67/24 183/3	ROOMS [3] 101/5 101/27 104/11
RELOCATE [1] 126/28	RESTART [3] 84/20 84/23 84/24	ROOSEVELT [1] 59/13
RELOCATED [1] 63/26	RESTATE [1] 189/13	ROSAMOND [7] 63/25 76/14 76/16 76/16 85/9 90/21 141/4
RELY [5] 183/25 183/26 183/28 184/4 206/1	RESTORE [1] 30/2	ROUGHLY [7] 57/24 136/16 137/4 147/23 151/14 156/23 194/22
RELYING [2] 162/12 162/14	RESULTING [1] 26/21	ROUND [2] 19/10 38/12
REMAIN [1] 64/28	RESULTS [1] 83/18	ROUNDED [4] 196/18 196/22 204/12 204/18
REMAINED [1] 11/11	RESUME [9] 1/14 2/21 5/25 6/28 113/10 114/10 179/13 206/14 207/8	ROUTE [2] 101/26 154/24
REMARKABLE [7] 11/6 19/3 31/19 31/22 87/28 89/13 98/27	RETAIN [1] 116/21	ROUTINE [4] 9/13 20/3 45/17 63/6
REMARKABLY [1] 89/4	RETIRED [3] 83/28 178/22 195/5	ROW [4] 119/12 119/13 119/24 174/5
REMEDY [1] 164/27	RETIREEES [1] 158/7	ROYAL [2] 7/24 7/25
REMEMBER [8] 41/5 47/28 49/12 56/4 87/12 104/15 159/18 171/12	RETRIEVE [1] 48/21	RPR [2] 2/28 208/23
REMOTE [9] 13/23 17/3 44/27 46/22 46/25 51/5 91/16 94/3 186/4	RETURN [8] 27/23 61/13 87/25 170/5 206/18 206/22 206/27 207/5	RUDIMENTARY [1] 20/12
REMOTELY [1] 31/11	RETURNED [1] 22/27	RULED [2] 4/18 200/7
REMOTENESS [11] 62/16 62/18 62/20 62/22 63/10 63/11 90/11 90/14 93/26 95/10 96/5	RETURNS [1] 170/4	RULES [3] 95/23 163/5 163/5
REMOTES [2] 157/24 160/1	REVIEW [2] 162/1 198/15	RUN [11] 16/11 28/10 78/9 78/11 85/15 86/17 86/21 93/14 99/3 110/3 203/5
REMRY [1] 2/6	REVIEWED [3] 2/3 181/9 184/15	RUNNING [1] 16/9
RENEW [1] 4/8	REVOLUTION [6] 21/5 21/6 21/17 31/27 31/28 32/8	RUNS [2] 57/2 57/3
RENEWED [1] 59/28	REVOLUTIONS [2] 21/5 31/26	RUNWAY [30] 20/6 25/22 25/23 28/1 28/5 45/21 74/27 74/28 75/2 85/5 85/6 85/15 90/25 91/4 95/1 108/24 118/25 146/17 154/28 155/2 155/3 155/3 155/5 155/5 155/8 155/9 156/12 166/10 166/12 188/24
REPEAT [1] 122/16	REWRITE [1] 82/17	RUNWAYS [9] 25/24 27/9 28/11 76/13 87/2 108/28 109/5 151/7 151/7
REPHRASE [1] 10/28	RHONA [4] 2/28 1/5 114/5 208/11	RUSH [1] 61/4
REPLACE [4] 84/2 89/7 89/8 110/25	RICE [1] 8/19	
REPLACEMENT [2] 110/26 175/11	RICHARD [5] 1/17 1/21 3/3 4/21 5/5	S
REPLACING [1] 146/17	RID [1] 170/18	S.O [1] 118/15
REPORT [4] 67/10 78/18 173/6 173/11	RIDGE [12] 29/7 29/21 29/23 30/3 60/12 60/14 60/16 60/17 60/20 60/23 80/14 92/23 4/25 5/2 5/12 5/28 10/18 15/10 26/18 26/25 33/6 34/17 38/22 38/23 40/25 44/19 45/12 46/11 55/11 61/12 61/23 61/25 62/8 64/9 64/11 64/26 65/1 67/20 67/22 68/16 68/22 73/20 73/22 74/26 74/27 76/5 80/13 82/10 83/5 84/6 85/5 87/14 89/10 89/27 90/1 90/22 93/1 95/6 97/20 98/5 100/18 102/12 105/14 106/1 106/19 109/5 109/18 109/26 112/3 112/15 113/7 114/10 114/15 116/7 116/14 118/25 120/13 120/20 121/27 123/9 125/12 126/2 126/25 127/2 128/21 129/28 130/10 133/22 135/21 136/13 138/4 140/4 140/7 140/17 142/13 147/15 150/23 153/7 153/8 154/18 154/23 155/1 155/3 155/10 155/12 155/13 155/14 155/14 155/16 155/17 155/18	SAFE [3] 23/6 36/25 88/26
REPORTED [1] 2/28	RIGHT [156] 1/14 1/19 4/6 4/18 4/19 4/22 4/25 5/2 5/12 5/28 10/18 15/10 26/18 26/25 33/6 34/17 38/22 38/23 40/25 44/19 45/12 46/11 55/11 61/12 61/23 61/25 62/8 64/9 64/11 64/26 65/1 67/20 67/22 68/16 68/22 73/20 73/22 74/26 74/27 76/5 80/13 82/10 83/5 84/6 85/5 87/14 89/10 89/27 90/1 90/22 93/1 95/6 97/20 98/5 100/18 102/12 105/14 106/1 106/19 109/5 109/18 109/26 112/3 112/15 113/7 114/10 114/15 116/7 116/14 118/25 120/13 120/20 121/27 123/9 125/12 126/2 126/25 127/2 128/21 129/28 130/10 133/22 135/21 136/13 138/4 140/4 140/7 140/17 142/13 147/15 150/23 153/7 153/8 154/18 154/23 155/1 155/3 155/10 155/12 155/13 155/14 155/14 155/16 155/17 155/18	SAFELY [1] 21/22
REPORTER [6] 2/28 1/5 114/5 146/9 208/11 208/23		SAFETY [8] 21/21 21/22 26/3 41/28 62/23 91/14 92/9 93/16
REPORTER'S [4] 1/10 65/25 81/28 208/8		SAID [34] 23/17 26/28 27/25 30/6 41/9 41/16 41/24 43/17 46/21 47/9 47/13 51/3 51/25 52/24 57/20 65/27 74/3 95/7 111/9 124/20 132/17 136/10 138/18 138/24 144/8 160/1 160/12 180/3 181/24 181/25 182/21 187/7 194/27 203/16
REPORTS [2] 184/1 188/18		
REPRESENT [3] 47/16 154/26 201/26		
REPRESENTATION [1] 2/17		
REPRESENTING [1] 31/25		
REPRESENTS [6] 32/17 32/28 36/22 120/26 181/3 202/8		
REQUEST [5] 59/1 69/21 162/8 162/13 200/24		
REQUESTED [1] 180/3		
REQUESTS [2] 162/10 162/22		
REQUIRE [2] 132/1 184/5		
REQUIRED [4] 29/9 122/14 187/18 199/8		
REQUIREMENT [3] 122/27 168/9 199/22		
REQUIREMENTS [7] 44/15 147/7 147/8		

S		
SALES [1] 155/20	104/19 104/26 108/11 114/7 117/20 118/17	SHIP [1] 20/20
SAME [15] 7/10 18/24 45/18 47/18 47/23	122/9 123/27 124/6 130/11 131/25 139/10	SHIPS [1] 20/22
69/23 75/8 85/28 90/19 102/17 116/13	147/26 147/27 154/16 154/23 154/25 156/10	SHOOTING [1] 39/5
142/11 142/26 193/1 194/26	156/17 157/12 158/2 160/22 160/22 160/28	SHOP [1] 181/11
SAN [6] 14/24 46/17 75/17 75/18 75/19	163/17 166/11 173/11 190/25 194/9 206/24	SHOPPING [1] 167/15
207/11	207/3 207/12 207/20	SHOPS [1] 188/18
SAN FRANCISCO [3] 75/17 75/18 75/19	SEEING [3] 46/28 63/1 173/1	SHORE [2] 14/1 15/19
SAN JOSE [1] 207/11	SEEKS [1] 44/17	SHORT [5] 2/6 3/16 4/9 24/24 129/7
SANDERS [3] 181/10 188/19 205/8	SEEM [1] 163/11	SHORTHAND [1] 23/28
SANDERS' [1] 190/24	SEEMS [7] 3/16 25/9 57/26 81/20 85/15	SHORTLY [3] 17/26 33/5 162/20
SANDS [2] 2/9 102/3	105/8 161/27	SHOULD [11] 6/1 49/25 74/11 102/27 110/6
SANTA [2] 29/26 47/28	SEEN [19] 2/21 11/20 15/15 16/17 43/6 88/8	141/15 158/3 163/16 195/8 200/10 200/27
SANTA BARBARA [1] 47/28	108/10 117/2 123/14 124/5 127/26 161/15	SHOULDN'T [1] 182/22
SATISFY [1] 191/28	162/15 163/4 172/7 172/12 172/28 192/28	SHOW [16] 12/26 22/5 23/22 26/5 31/8
SATURN [3] 29/22 30/16 30/19	193/5	57/12 90/24 91/18 98/14 120/14 138/11
SAVAGE [1] 2/7	SELECT [1] 36/9	142/8 149/2 153/28 174/7 175/18
SAVE [1] 145/15	SELECTED [4] 36/13 45/23 46/13 143/15	SHOWED [4] 34/28 35/5 191/4 191/18
SAVED [1] 25/15	SELECTION [1] 45/22	SHOWING [5] 12/10 12/22 30/1 127/4
SAVES [2] 89/19 89/20	SELL [2] 107/18 198/10	153/27
SAVINGS [1] 128/7	SEMINAR [1] 69/14	SHOWN [5] 23/19 24/26 25/19 28/19
SAW [11] 32/2 32/9 32/11 41/13 41/22 47/4	SEND [3] 65/18 91/18 145/15	156/18
49/18 49/19 90/20 92/28 146/18	SENDING [1] 197/21	SHOWS [17] 15/7 22/6 27/15 28/9 28/10
SAY [43] 3/23 14/22 14/28 18/26 22/15 28/2	SENIOR [6] 7/28 8/17 8/24 71/1 143/10	31/14 42/13 85/4 90/18 90/23 98/11 101/11
33/13 35/26 39/10 39/24 42/8 47/3 49/25	144/6	117/25 130/15 156/2 158/16 202/1
79/12 81/9 89/16 91/25 94/26 95/22 97/17	SENSE [12] 14/22 21/21 24/14 40/7 51/12	SHRINKS [1] 84/1
97/21 102/27 106/4 110/6 113/9 122/21	51/28 52/4 57/12 57/16 82/14 82/15 126/9	SHUT [1] 89/10
125/5 127/3 127/3 127/16 127/20 129/2	SENSITIVE [1] 19/26	SHUTTLE [5] 11/17 42/7 42/13 42/19 43/13
129/6 129/9 129/15 130/13 133/28 134/12	SENT [4] 13/27 56/12 197/3 197/26	SHUTTLES [1] 42/16
136/14 138/23 177/2 193/26 202/24	SEPARATE [2] 23/11 56/5	SIC [5] 3/3 101/4 162/7 201/4 206/15
SAYING [6] 19/19 48/8 127/5 135/13	SEPTEMBER [3] 13/27 59/4 59/15	SICK [1] 66/3
164/19 189/8	SEPTEMBER 1933 [1] 13/27	SIDE [8] 17/11 35/19 35/19 76/9 145/26
SAYS [9] 104/1 105/5 105/16 118/3 123/26	SEPTEMBER 1939 [2] 59/4 59/15	148/6 156/28 157/1
130/21 130/25 135/15 153/7	SEQUENCE [2] 162/4 162/6	SIDES [1] 25/24
SCALE [4] 15/5 74/28 98/19 98/22	SERIES [8] 8/15 10/3 11/22 12/16 21/28	SIGN [2] 75/27 91/21
SCANNING [1] 71/19	22/7 22/8 35/4	SIGNIFICANCE [2] 92/2 121/27
SCHEDULE [1] 205/13	SERIOUS [2] 35/6 62/28	SIGNIFICANT [3] 3/13 13/13 169/9
SCHEDULING [1] 96/28	SERVED [7] 8/17 34/25 34/26 34/27 35/19	SIGNIFICANTLY [1] 170/17
SCHOOL [11] 7/18 69/7 69/8 69/13 81/10	143/22 144/6	SIMILAR [3] 67/4 100/5 192/28
88/21 88/22 122/10 142/17 143/16 144/2	SERVICE [15] 1/19 2/10 13/2 27/24 36/4	SIMPLE [2] 79/20 139/15
SCHOOLS [1] 88/28	48/2 49/10 49/14 49/23 50/1 50/3 58/5 134/5	SIMPLY [6] 9/27 27/22 32/3 57/12 133/14
SCHRECK [1] 1/22	144/20 167/17	187/12
SCIENCE [5] 8/1 69/2 69/5 142/25 143/16	SERVICES [1] 145/19	SIMULTANEOUSLY [3] 97/7 172/10
SCOPE [2] 40/12 154/28	SERVICING [1] 104/8	200/22
SCORING [1] 77/9	SESSION [1] 207/21	SINCE [8] 2/18 11/7 14/17 33/7 163/3
SCOUTED [1] 13/28	SESSIONS [2] 1/6 114/6	178/22 193/14 195/5
SCRAMJET [2] 36/17 36/18	SET [8] 85/18 88/12 88/18 89/7 105/27	SINGLE [7] 13/5 84/17 84/22 106/27 110/4
SCRATCH [1] 196/9	106/1 106/17 155/11	110/6 122/5
SCREEN [1] 154/15	SET-DOWN [1] 89/7	SINO [1] 16/13
SCRUNCHED [1] 4/27	SETTING [1] 136/16	SINO-JAPANESE [1] 16/13
SEA [2] 102/15 102/15	SETTLERS [1] 14/11	SIR [92] 4/22 5/9 5/12 40/13 42/5 49/6 53/5
SEAT [1] 140/27	SETUP [1] 99/7	64/26 96/25 114/20 118/27 138/20 139/20
SEATED [1] 61/13	SETUPS [1] 99/9	141/17 142/22 143/5 145/5 147/1 148/11
SEATTLE [1] 111/2	SEVEN [3] 107/26 144/20 179/11	148/23 148/28 150/28 151/16 151/21 153/11
SECOND [16] 5/25 22/20 22/27 25/6 46/7	SEVEN-MINUTE [1] 179/11	153/19 153/23 157/21 159/14 159/28 167/8
47/4 65/14 90/10 90/13 106/9 115/23 142/23	SEVERAL [7] 15/4 84/14 143/5 143/6	167/13 167/21 168/2 168/8 171/11 171/26
150/4 160/2 181/20 201/10	144/18 171/6 175/26	172/13 172/26 173/15 174/1 174/19 176/7
SECONDS [2] 113/3 193/3	SEWAGE [1] 170/14	176/17 177/23 177/28 178/8 178/17 181/9
SECONDS' [1] 105/10	SEWER [1] 66/25	182/8 183/18 184/14 186/11 188/1 191/16
SECREC Y [3] 21/21 24/4 46/27	SHADE [1] 161/7	191/21 192/16 192/22 193/9 193/11 193/13
SECRETARIAL'S [1] 8/18	SHALIMAR [1] 5/7	193/15 193/18 193/26 194/9 194/25 195/12
SECRETARY [4] 8/19 121/20 127/5 127/14	SHALL [5] 5/16 22/1 65/4 140/24 166/1	195/17 195/18 197/1 197/2 197/20 198/1
SECRETARY'S [1] 8/18	SHAPE [2] 20/25 20/25	198/11 198/22 201/17 201/17 202/15 202/19
SECTION [3] 26/15 51/7 98/17	SHAPES [2] 55/1 76/15	202/26 203/9 203/10 203/13 203/20 204/5
SECURITY [6] 7/17 8/23 8/26 28/24 69/12	SHARE [1] 151/17	204/6 204/15 205/4 205/18 206/3 206/5
171/3	SHARED [1] 35/19	206/8
SEE [73] 1/7 15/6 15/11 16/6 16/20 17/24	SHEEP [1] 2/9	SIT [3] 4/24 88/13 165/3
20/13 21/2 21/4 22/1 25/10 25/20 26/23	SHEER [1] 152/23	SITE [12] 14/21 17/3 19/14 19/15 19/15
27/21 27/28 31/22 32/5 32/13 43/8 43/9	SHEET [2] 148/19 183/8	25/17 30/17 31/23 51/5 51/5 159/4 162/1
47/21 48/14 51/7 62/22 74/15 74/19 74/26	SHEFFIELD [1] 2/5	SITES [2] 29/26 90/27
75/17 75/19 75/23 88/5 90/25 92/22 93/15	SHELLED [1] 47/28	SITING [1] 63/12
97/15 97/16 98/8 98/15 101/19 101/20	SHEMYA [2] 143/23 157/24	SITS [5] 76/5 78/17 80/13 100/17 136/18
	SHIELDS [1] 29/16	SITTING [4] 85/6 90/22 129/20 134/28
	SHIFT [2] 8/4 72/5	SITUATION [4] 15/24 16/2 60/5 180/6

S		
SITUATIONS [1] 16/5	40/24 45/19 50/14 55/13 63/15 74/27 79/12	STAGES [1] 27/16
SIX [2] 86/16 127/22	87/26 88/16 94/26 115/17 126/6 136/24	STALLED [1] 26/20
SIX MILES [1] 86/16	137/12	STAMP [2] 116/6 149/18
SIZE [10] 47/14 47/15 47/20 57/22 57/23	SORTIE [8] 102/7 102/8 102/18 102/25	STAMPED [1] 65/28
63/10 109/20 110/12 138/2 139/14	103/19 103/19 103/28 103/28	STAND [6] 61/13 118/6 158/12 165/8
SKIES [1] 32/13	SORTIES [2] 47/25 97/7	178/14 179/11
SKILL [1] 88/25	SORTS [2] 47/23 119/18	STANDING [2] 64/28 159/15
SKIP [4] 20/22 28/18 28/20 165/28	SOTTO [5] 5/10 49/2 140/14 150/2 150/11	STANDOFF [2] 32/26 92/14
SKYDIVE [1] 157/8	SOUND [6] 4/28 21/15 36/21 47/26 63/9	STANDPOINT [2] 12/19 40/16
SLASH [1] 19/14	201/16	STANDS [5] 29/8 36/17 77/15 151/26 167/3
SLATED [1] 111/21	SOUNDS [2] 8/28 55/13	STARBUCKS [1] 167/18
SLICE [2] 42/28 43/18	SOURCE [4] 12/7 173/3 173/3 196/24	START [10] 7/3 10/22 54/6 59/3 74/1 97/25
SLIDE [32] 23/22 26/5 27/14 27/15 27/18	SOURCES [4] 167/24 169/4 174/10 186/10	99/11 178/2 188/9 192/4
27/27 28/7 28/8 28/15 28/18 29/19 31/7 32/8	SOUTH [10] 20/20 24/8 76/6 147/28 154/17	STARTED [15] 16/6 17/18 17/21 21/2 21/4
35/23 35/24 35/26 35/28 37/7 151/17 151/18	154/27 155/9 156/8 156/25 157/26	40/6 59/4 66/1 69/2 87/12 97/24 99/1 99/2
152/2 152/3 152/25 153/12 156/1 156/6	SOUTHERN [2] 154/16 168/13	179/20 203/16
156/19 157/22 158/14 158/15 159/23 160/15	SPACE [47] 9/6 10/2 11/17 17/27 19/7 20/7	STARTING [5] 103/23 166/6 172/17 200/4
SLIDES [1] 34/28	28/6 29/1 29/3 30/3 30/22 31/24 38/11 42/6	203/11
SLIGHTLY [1] 122/10	42/13 42/16 42/19 43/13 44/28 45/2 45/3	STATE [23] 1/1 2/11 2/11 5/2 5/3 5/14
SLIP [1] 97/27	45/4 56/8 75/21 76/10 92/10 93/4 96/25	43/21 65/2 65/7 65/8 69/3 69/5 69/16 101/19
SLOAN [1] 2/15	99/17 119/9 126/3 130/11 130/12 133/17	106/19 140/22 140/28 147/22 168/18 168/19
SLOW [2] 69/25 146/8	136/25 136/26 137/1 137/16 146/6 151/8	187/2 208/1 208/12
SMALL [17] 19/23 56/11 56/12 63/4 74/18	151/11 151/13 154/19 155/17 156/5 156/15	STATED [3] 131/18 176/1 190/14
76/15 77/5 94/16 99/17 119/22 122/8 122/12	156/22	STATEMENT [5] 149/11 149/25 162/20
122/13 145/12 166/22 166/22 167/20	SPACES [2] 13/15 14/25	181/6 207/13
SMALLER [1] 122/4	SPAIN [1] 16/13	STATEMENTS [1] 149/6
SMASH [1] 26/20	SPAN [1] 156/9	STATES [20] 1/14 2/13 4/21 8/10 8/11 8/20
SMITHSONIAN [2] 8/9 9/5	SPAN'S [1] 155/28	10/7 12/11 34/3 38/6 64/24 73/12 96/20
SMOKES [1] 85/21	SPEAK [3] 67/14 78/23 186/1	111/9 122/15 124/14 130/15 134/16 142/19
SMOKING [1] 27/26	SPEAKING [2] 172/10 200/22	160/3
SMOOTH [2] 27/6 27/20	SPECIAL [9] 8/23 8/26 24/7 63/13 107/27	STATIONED [9] 9/10 58/8 58/12 58/13
SMOOTHLY [1] 25/20	107/28 107/28 137/11 137/13	59/18 82/23 82/28 83/4 178/27
SMOOTHES [1] 46/3	SPECIALTY [2] 7/8 17/3	STATIONS [1] 101/2
SO [402]	SPECIFIC [11] 4/16 52/14 56/22 57/6 103/6	STATUS [3] 94/3 94/4 94/12
SO-CALLED [4] 19/25 22/7 23/25 32/15	105/20 111/20 111/20 111/23 126/3 126/4	STAY [3] 6/6 24/3 182/17
SOCIETY [2] 7/25 7/25	SPECIFICALLY [5] 10/8 48/5 71/22 78/16	STEADY [4] 9/13 43/10 59/10 59/11
SOD [1] 170/24	171/15	STEALTH [1] 23/25
SOFTBALL [1] 160/21	SPECIFICS [1] 71/17	STEAM [1] 37/11
SOLELY [1] 187/6	SPECULATE [1] 42/11	STEP [3] 87/4 103/23 139/20
SOLEMNLY [3] 5/14 65/2 140/22	SPECULATING [2] 42/15 42/17	STEWARD [1] 171/28
SOLID [2] 30/1 146/6	SPECULATION [5] 134/23 134/26 139/17	STICK [1] 94/16
SOLUTIONS [1] 54/18	139/18 199/16	STILL [16] 19/4 19/6 24/21 85/22 96/1
SOME [59] 9/14 12/21 13/4 13/6 17/16 18/6	SPECULATIVE [2] 177/7 199/14	102/5 114/11 122/2 128/13 128/28 142/2
22/1 25/4 29/9 29/14 29/25 30/8 32/24 34/28	SPEED [11] 21/6 21/15 36/21 36/22 37/11	144/24 186/24 200/18 204/6 206/18
35/6 35/19 35/20 39/14 45/19 50/19 50/20	37/24 37/26 38/1 38/5 86/4 137/1	STIPULATION [1] 164/25
54/14 54/14 57/19 58/11 60/11 67/12 69/18	SPEEDS [1] 136/28	STIPULATIONS [3] 206/21 206/24 207/4
80/23 84/19 84/21 86/19 86/20 94/6 98/22	SPELL [3] 5/2 65/7 140/28	STOOD [1] 137/18
102/16 106/11 108/8 108/19 112/1 119/1	SPEND [4] 94/5 145/21 164/14 199/24	STOP [9] 22/13 26/25 86/3 86/4 86/9 113/6
136/13 136/15 137/7 137/8 137/11 154/25	SPENDING [3] 133/4 133/5 199/25	161/20 189/7 189/25
161/20 162/22 163/15 164/17 164/21 165/12	SPLIT [1] 19/22	STORAGE [3] 158/18 158/24 167/2
165/16 168/28 181/6 182/28 201/11 207/17	SPOKE [5] 5/10 49/2 140/14 150/2 150/11	STORE [1] 167/15
SOMEBODY [3] 2/13 74/12 182/21	SPRANG [1] 33/19	STORM [1] 106/25
SOMEHOW [1] 207/18	SPRAY [1] 166/10	STORY [1] 54/4
SOMEONE [4] 96/27 141/28 142/9 180/7	SPREAD [2] 98/16 99/18	STRAFE [1] 40/11
SOMEONE'S [2] 84/21 93/18	SPREADSHEET [14] 178/28 180/10 180/21	STRAIGHT [1] 85/16
SOMETHING [15] 15/15 17/12 28/3 30/9	180/25 182/12 182/17 182/20 182/22 182/27	STRAIGHTFORWARD [2] 49/7 105/8
44/14 62/21 64/1 100/5 100/18 135/15	183/13 183/14 183/17 184/15 201/28	STRATEGIC [13] 37/27 70/25 71/6 71/18
137/20 160/13 169/1 191/2 203/27	SPREADSHEETS [1] 198/22	73/19 105/23 122/19 127/7 127/21 131/6
SOMETIMES [6] 20/9 79/26 88/14 102/14	SPRING [3] 188/16 193/20 195/4	134/28 139/7 144/9
160/11 207/1	SQUADRON [6] 69/7 73/5 82/26 144/2	STRATEGICALLY [2] 71/5 71/5
SOMEWHAT [1] 90/7	196/4 198/7	STRATEGY [7] 28/24 70/15 70/16 70/20
SOMEWHERE [2] 81/10 134/10	SQUADRONS [1] 161/6	71/28 72/4 197/26
SON [2] 94/15 107/3	SQUARE [14] 19/4 25/26 44/26 75/3 75/4	STRESS [1] 146/10
SOPHISTICATED [2] 36/16 44/5	76/26 76/27 125/8 151/8 151/11 151/12	STRESSES [2] 104/20 104/21
SORRY [40] 5/20 13/8 14/6 15/20 15/26	151/12 155/17 186/24	STRETCH [1] 40/9
19/17 23/27 24/9 25/7 25/11 26/9 37/21	SQUASH [1] 147/23	STRIKE [11] 20/21 30/26 34/18 58/27 73/9
45/14 61/17 62/2 67/16 68/13 94/9 95/23	ST [1] 2/10	112/4 112/6 134/16 155/13 165/20 169/28
136/8 140/8 142/15 142/22 149/1 149/22	STACK [1] 65/22	STRIKES [1] 37/8
151/18 151/18 153/14 153/17 157/16 161/11	STAFF [16] 8/11 8/17 8/18 9/8 13/20 65/18	STRIKING [1] 164/16
169/12 172/6 173/13 174/7 178/21 178/21	69/9 70/3 70/11 70/19 107/14 113/8 143/24	STRING [2] 197/6 197/10
190/7 195/23 206/5	144/3 144/9 184/7	STRONGLY [1] 36/15
	STAGE [1] 57/20	STRUCTURE [8] 13/5 26/15 28/25 29/15
		79/19 121/16 121/18 130/28

S	SUSPECT [2] 30/8 55/9 SUSPICION [1] 192/9 SUSTAIN [3] 60/8 180/15 185/5 SUSTAINABILITY [1] 122/19 SUSTAINED [6] 4/9 59/24 111/26 170/9 175/6 183/23 SWEAR [1] 140/17 SWING [1] 98/23 SWITCH [1] 73/26 SWITCHED [1] 8/22 SWORN [2] 5/11 64/27 SYMBOL [1] 33/15 SYMBOLS [1] 32/20 SYMPATHY [2] 69/27 152/27 SYNCHRONIZED [1] 39/7 SYNOPSIS [2] 8/6 10/25 SYRACUSE [1] 69/13 SYSTEM [22] 31/11 31/12 31/13 32/6 54/16 66/25 79/3 79/4 80/2 80/7 80/7 85/25 85/27 85/28 129/25 158/27 166/16 170/13 170/14 170/17 171/23 SYSTEMS [13] 9/12 44/17 79/5 79/7 79/9 80/21 80/22 80/22 81/6 81/8 83/27 131/12 160/22	TEACH [1] 71/16 TEAM [4] 56/11 56/12 104/23 126/17 TEAMS [1] 23/15 TECHNICAL [3] 43/1 44/17 151/13 TECHNICALLY [3] 32/16 95/20 115/15 TECHNOLOGIES [2] 47/5 83/27 TECHNOLOGY [25] 7/8 8/1 13/3 13/4 13/6 13/9 13/13 18/22 19/27 29/3 32/18 35/16 35/17 37/9 43/15 43/22 44/2 44/2 49/18 55/4 79/27 107/16 107/19 107/22 139/12 TECTONIC [1] 21/12 TEES [1] 159/12 TEETH [1] 77/24 TEJON [22] 2/3 3/11 3/12 3/13 3/15 116/20 120/11 120/11 120/16 120/26 121/2 123/5 123/18 123/24 125/1 140/11 140/19 140/19 197/5 197/9 201/18 201/21 TEJON 1 [1] 120/11 TEJON-1 [2] 120/16 120/26 TEJON-3 [1] 197/9 TEJON-4 [1] 201/21 TELEMETRY [9] 93/4 101/1 101/2 101/8 101/25 101/26 104/10 104/28 105/17 TELL [18] 66/14 81/2 109/8 116/28 119/22 128/11 128/12 128/15 129/22 152/5 157/10 168/12 187/11 188/15 193/19 194/7 200/4 202/7 TELLING [1] 170/5 TELLS [1] 107/20 TEMPELHOF [1] 143/19 TEMPORARY [1] 85/6 TEN [5] 96/27 112/13 130/27 131/20 145/3 TEN-YEAR [1] 130/27 TENANT [11] 115/16 115/17 118/9 118/12 118/14 122/1 122/3 122/8 122/8 122/11 122/13 TENANTS [4] 119/3 121/22 121/26 122/5 TEND [2] 69/23 164/5 TENNESSEE [2] 67/7 72/20 TENS [2] 30/7 58/5 TENT [1] 15/1 TENT-LIKE [1] 15/1 TENURE [3] 82/21 82/24 170/26 TERM [24] 14/6 18/22 19/26 71/13 103/6 103/9 105/25 106/7 106/19 112/19 118/15 119/14 119/25 125/14 125/15 125/17 125/18 126/10 130/16 130/18 131/4 133/8 136/3 205/20 TERMS [48] 11/12 20/27 37/25 45/10 45/22 46/28 57/11 63/12 71/18 71/23 75/5 75/13 76/10 76/23 77/16 78/1 79/15 79/17 80/19 81/25 81/25 85/1 90/20 92/14 93/17 97/3 98/27 99/9 99/23 99/24 100/6 101/8 101/16 104/6 104/20 108/21 118/1 127/2 127/3 131/10 132/8 133/14 137/12 139/7 139/10 139/14 181/12 189/4 TERRAIN [1] 27/4 TEST [137] 8/12 8/14 9/13 9/14 9/27 9/27 11/19 14/14 16/8 17/4 19/15 19/25 21/22 23/4 23/5 23/13 23/14 23/15 24/7 24/19 29/8 29/25 35/7 36/25 36/27 37/1 41/14 48/7 49/8 49/9 49/16 49/20 50/3 54/22 56/18 57/3 57/6 57/7 58/19 58/21 63/14 63/15 63/28 65/13 66/17 66/18 66/21 66/27 66/28 67/1 67/3 69/8 72/12 72/21 72/23 72/26 72/28 73/2 73/6 73/7 73/7 73/14 77/13 77/15 78/12 78/15 78/18 78/19 78/27 79/28 81/10 83/16 83/17 83/19 83/26 84/8 84/9 84/10 86/20 88/21 88/21 88/27 88/27 91/23 92/10 92/13 93/22 94/20 94/23 95/20 96/1 96/3 97/7 97/11 97/19 97/22 99/12 99/17 99/19 99/28 100/4 100/20 102/1 102/2 103/11 109/4 109/6 110/22 110/24 112/16 115/8 115/9
STRUCTURES [3] 31/27 81/25 151/10 STUDENTS [1] 88/21 STUDIES [1] 7/17 STUDY [1] 9/4 STUFF [4] 39/2 65/18 72/21 162/24 SUBJECT [3] 34/18 121/7 200/8 SUBMARINE [1] 48/1 SUBMARINES [1] 47/27 SUBMISSION [3] 1/28 3/2 64/14 SUBMISSIONS [1] 148/24 SUBMITTED [2] 140/2 142/4 SUBSCALE [1] 32/22 SUBSONIC [1] 43/23 SUBSTANTIALLY [2] 39/25 149/19 SUBSTANTIVELY [1] 163/7 SUBSTITUTE [1] 150/8 SUBWAY [1] 167/19 SUCCESES [1] 21/27 SUCCESSFUL [1] 63/18 SUCCESSFULLY [6] 63/26 103/17 105/5 105/6 105/7 106/26 SUCH [12] 16/10 25/19 35/21 49/24 49/24 106/20 125/28 145/22 145/22 146/17 151/27 205/28 SUFFER [2] 69/18 69/22 SUFFICIENT [1] 186/9 SUGGEST [4] 98/6 134/23 135/9 138/21 SUGGESTING [4] 42/26 152/26 177/15 199/23 SUGGESTS [1] 134/19 SUITABLE [2] 13/26 14/1 SUITE [1] 141/5 SUITED [1] 27/6 SUM [1] 46/5 SUMMARIZE [8] 11/2 72/7 151/4 151/22 152/4 166/4 175/19 175/23 SUMMARIZES [2] 152/5 152/6 SUMMARY [4] 150/27 151/1 152/3 153/10 SUMMERTIME [1] 161/5 SUPERIOR [3] 1/1 208/1 208/12 SUPERIORS [1] 198/3 SUPERSONIC [19] 21/9 21/13 21/27 22/7 36/18 42/2 42/22 42/23 43/24 63/27 100/11 100/13 100/19 100/20 100/20 100/22 102/12 102/17 102/24 SUPERVISE [1] 145/6 SUPERVISION [1] 185/13 SUPERVISORY [1] 145/4 SUPPLEMENT [1] 159/2 SUPPLEMENTAL [1] 162/2 SUPPLY [5] 154/26 161/9 168/23 169/2 169/2 SUPPORT [15] 66/24 112/17 139/4 151/13 154/20 156/15 160/7 166/7 166/24 166/27 167/2 168/26 181/14 186/13 205/7 SUPPORTING [1] 166/28 SUPPRESSION [2] 145/18 166/15 SUPREMACY [1] 30/3 SURE [38] 12/19 48/8 60/7 65/17 79/9 79/15 80/3 81/4 82/25 85/5 86/2 86/19 94/1 96/8 98/14 103/15 107/7 107/15 111/6 115/27 119/20 125/16 127/24 128/19 128/24 134/9 134/10 135/19 163/23 164/11 180/17 182/13 182/19 186/9 195/28 198/16 198/28 204/12 SURFACE [9] 25/21 27/11 28/12 28/13 45/20 46/2 89/23 90/5 90/7 SURROUNDING [3] 14/4 15/2 58/23 SURVEILLANCE [3] 31/12 32/27 78/5 SURVEY [1] 13/27 SURVIVE [1] 68/17 SUSANA [1] 29/27	T T-H-O-M-A-S [1] 65/12 T.A.C.T [1] 35/17 TABLE [9] 46/4 123/24 123/26 172/15 172/16 172/21 173/12 190/2 192/18 TACT [1] 55/3 TACTICAL [4] 70/21 71/10 78/23 106/3 TACTICS [6] 16/8 20/4 40/8 49/28 70/14 70/16 TAILLESS [1] 18/19 TAKE [44] 14/22 15/3 26/10 32/19 34/17 36/10 37/4 43/17 48/9 53/2 60/25 60/26 61/6 76/25 84/17 84/18 84/22 84/22 86/4 89/18 89/20 90/9 94/15 103/15 106/6 112/25 113/11 113/14 113/21 116/26 137/3 176/17 179/8 179/10 179/10 179/13 179/20 193/10 193/28 195/8 198/15 201/27 202/5 206/13 TAKEN [13] 13/10 13/11 15/17 15/18 17/20 17/25 22/21 22/28 29/28 47/21 113/26 180/13 208/15 TAKEOFF [1] 86/4 TAKES [4] 31/20 49/28 76/7 103/12 TAKING [8] 42/28 49/22 94/10 124/28 154/27 157/6 163/22 187/12 TALK [30] 12/7 33/11 36/1 46/6 50/21 56/4 69/23 70/5 71/22 74/16 74/16 81/4 84/6 92/20 95/15 96/7 97/12 97/17 98/3 103/11 106/9 110/22 127/6 128/18 128/26 150/25 175/1 176/14 178/11 183/12 TALKED [8] 95/8 98/16 101/16 108/21 111/18 112/14 127/23 181/24 TALKING [24] 34/15 40/17 41/5 41/6 41/7 73/26 76/18 86/16 87/14 90/13 99/10 101/17 101/20 103/11 103/24 105/28 111/22 127/3 128/21 131/5 146/16 152/27 164/2 199/14 TALKS [1] 124/1 TALL [2] 63/24 147/24 TANK [4] 158/19 158/24 158/25 167/2 TANKERS [1] 103/2 TANKS [2] 55/1 159/9 TARGET [2] 77/2 105/6 TARGETS [6] 20/17 20/18 54/17 99/18 123/2 123/3 TASK [3] 125/20 126/7 126/7 TASKED [1] 178/19 TAXIWAY [1] 156/12 TAXIWAYS [1] 155/6 TAXPAYER [1] 79/6	

T	116/12 117/17 117/21 118/7 118/8 118/11 121/10 121/14 121/20 122/1 122/16 123/1 125/16 127/19 127/24 128/22 129/20 130/7 131/8 132/16 132/16 132/17 133/7 134/5 135/14 136/22 137/3 137/21 138/2 138/13 139/16 139/17 148/10 153/1 153/5 153/18 155/28 157/3 158/1 160/25 161/3 161/28 162/15 164/4 169/14 177/16 179/23 179/24 181/8 182/14 182/14 182/26 182/27 183/1 183/6 184/9 185/6 185/17 189/12 193/15 194/26 196/19 196/19 200/28 201/4 207/18 THE NUMBER [1] 57/28 THEATER [3] 70/20 71/7 71/10 THEIR [24] 2/18 14/23 15/13 16/8 16/8 22/9 29/11 43/9 43/9 54/14 79/26 80/16 80/16 83/23 99/24 108/28 109/5 109/6 119/18 121/18 166/26 168/16 202/2 205/9 THELEN [1] 2/5 THEM [32] 2/11 2/12 3/22 3/24 3/25 6/7 13/16 20/11 44/26 62/16 77/8 87/6 91/18 91/19 91/19 91/22 94/16 95/17 98/2 110/1 117/16 128/6 133/26 145/25 158/2 161/15 161/16 163/1 164/16 168/11 181/24 201/28 THEME [1] 32/7 THEMSELVES [2] 3/13 80/22 THEN [98] 7/10 8/19 9/15 13/1 14/12 14/13 14/28 19/13 20/28 21/23 22/28 24/4 24/6 24/19 32/11 41/17 44/1 44/16 45/5 45/19 46/3 48/19 49/12 55/16 56/13 58/2 59/6 63/7 69/4 70/15 70/21 71/25 71/28 72/3 72/23 73/7 77/26 78/3 80/2 81/8 81/19 84/23 87/7 88/18 89/11 93/5 96/27 96/27 101/6 102/5 102/6 102/18 102/21 105/2 106/24 115/12 116/23 118/17 122/4 123/3 125/24 125/27 137/24 143/10 144/10 146/16 147/22 148/6 148/26 156/14 156/22 157/13 158/25 159/6 159/10 162/12 162/23 164/2 166/10 167/25 171/14 173/7 174/4 177/4 179/1 181/11 182/15 189/23 190/14 190/17 193/6 194/4 199/7 200/19 200/20 201/12 204/16 204/18 THEORETICALLY [1] 177/14 THERE [162] 3/2 4/27 6/6 10/13 11/6 11/8 11/17 14/12 16/3 17/17 18/10 19/19 20/24 22/13 23/10 23/12 25/23 25/24 26/25 27/13 30/12 30/24 33/28 40/17 40/21 41/23 42/14 42/18 43/10 43/27 45/24 45/26 45/27 45/28 45/28 46/6 46/11 46/14 46/28 47/2 48/1 49/21 51/22 52/5 52/15 52/15 54/23 54/23 54/28 56/7 56/8 57/20 58/10 58/13 58/15 59/10 59/10 60/11 67/11 67/23 70/17 73/20 74/11 74/11 76/7 76/21 78/13 81/6 83/4 84/3 84/16 85/18 88/13 90/12 91/18 92/13 92/28 93/20 93/22 94/2 94/22 94/23 95/1 95/7 96/3 97/21 97/23 105/7 107/27 107/28 109/8 109/12 111/13 111/14 111/20 114/28 117/16 117/16 118/23 119/2 119/7 119/11 119/20 119/20 121/22 121/24 121/26 122/26 122/27 124/12 129/1 129/20 130/3 131/27 133/21 134/26 135/14 135/14 142/4 145/7 146/14 147/14 147/27 148/1 151/28 153/4 153/7 154/21 155/18 155/18 155/25 155/27 156/8 156/10 157/4 159/10 160/24 161/8 162/10 162/10 162/22 163/11 164/12 164/21 167/6 168/9 169/10 173/20 173/25 174/5 174/18 180/1 181/15 186/25 188/2 189/7 189/10 189/25 190/9 194/2 200/10 206/20 THERE ALSO [1] 188/2 THERE IS [1] 45/28 THERE'S [41] 12/19 24/21 27/19 27/21 42/12 49/7 51/21 70/16 83/10 83/14 85/2 88/17 88/17 91/4 91/5 91/25 92/23 93/5 98/24 100/13 104/23 112/6 117/25 118/12 123/24 124/11 126/1 126/28 128/12 128/27	130/2 130/3 130/20 164/11 177/8 183/7 186/9 188/23 199/28 200/1 207/17 THEREABOUTS [2] 156/10 159/28 THEREAFTER [1] 173/7 THEREFORE [1] 3/21 THESE [77] 2/17 3/4 3/26 4/9 12/22 13/15 14/5 14/18 15/13 15/15 19/1 22/8 22/10 22/11 23/11 23/16 23/17 29/8 29/13 30/6 32/1 34/6 34/9 35/18 40/26 47/1 50/10 62/25 65/27 67/10 76/21 77/7 77/9 84/15 87/5 87/5 87/7 101/22 102/4 102/26 102/27 103/3 104/22 106/15 108/24 113/20 117/15 122/12 126/22 139/4 139/25 149/17 149/19 155/22 156/17 158/9 161/13 161/24 161/25 162/3 162/15 162/17 162/19 162/25 163/16 164/7 164/15 164/26 165/4 165/7 165/15 165/28 167/28 173/3 174/5 183/20 206/28 THEY [99] 1/16 1/17 2/9 2/10 2/12 3/16 3/17 3/18 3/20 6/2 14/18 14/22 16/7 16/8 19/22 19/28 20/2 20/3 23/19 28/14 34/12 34/26 34/26 35/2 40/2 42/5 42/13 42/19 42/23 43/9 43/12 43/12 43/13 43/15 43/19 44/6 44/10 44/10 44/24 50/20 52/28 54/9 54/12 54/14 54/15 54/15 56/14 56/20 56/20 56/22 56/25 56/26 56/26 65/18 68/17 78/23 81/7 81/17 82/3 82/10 82/26 83/1 85/26 87/2 89/1 89/14 91/18 94/2 106/17 106/18 106/20 108/4 109/6 111/10 116/3 116/14 119/7 121/15 121/25 133/25 134/14 135/3 137/2 138/23 145/25 149/18 160/5 161/14 161/27 162/25 163/6 163/27 163/28 168/2 168/15 171/14 181/23 200/16 207/2 THEY'LL [4] 4/1 64/17 80/18 161/7 THEY'RE [20] 3/17 23/18 47/22 50/13 52/16 72/10 87/7 89/17 101/5 109/5 109/7 109/8 116/2 153/23 163/6 163/26 167/3 173/2 200/17 200/19 THEY'VE [5] 6/4 47/19 94/2 94/3 107/26 THING [7] 55/12 69/21 85/28 123/1 128/21 128/22 138/27 THINGS [36] 16/12 24/16 28/14 30/19 32/28 39/9 39/14 40/24 41/7 47/18 47/21 50/14 52/6 58/19 63/15 72/18 79/10 81/7 84/15 84/17 85/19 86/28 91/24 104/15 104/16 104/18 104/22 105/28 106/15 108/24 111/21 111/24 119/19 127/2 139/15 163/9 THINK [113] 4/8 12/18 26/8 28/8 28/18 31/3 32/28 34/10 37/5 37/25 38/14 39/16 39/24 40/8 40/11 40/17 41/11 41/12 41/16 43/12 43/14 43/28 44/12 44/28 46/15 46/18 47/9 52/4 52/28 57/19 58/6 60/8 63/18 70/10 71/5 72/25 75/13 76/11 77/24 80/24 81/15 83/17 87/15 88/9 88/20 94/13 94/25 95/8 95/11 95/13 97/13 106/6 106/7 108/8 109/16 109/17 109/18 109/23 109/28 110/3 111/18 111/21 112/25 113/5 114/10 115/20 122/16 123/14 127/19 128/20 129/26 130/2 132/16 134/28 135/2 135/6 137/10 138/2 149/1 152/15 153/1 156/2 158/8 161/26 163/26 164/5 164/12 164/20 164/28 165/27 171/8 171/13 171/20 173/21 176/3 179/9 179/19 179/27 179/27 180/1 180/10 180/12 180/14 183/1 183/2 184/20 186/24 195/10 196/6 203/16 205/17 205/21 206/9 THINKING [4] 35/8 35/9 39/5 55/13 THINKS [1] 104/11 THIRD [5] 46/21 95/9 95/11 95/13 98/25 THIRTY [2] 130/19 130/21 THIS [442] THOMAS [2] 3/4 65/11 THOSE [63] 3/8 11/15 12/18 21/28 31/21 32/24 34/13 37/25 39/6 47/22 57/11 57/13 58/11 71/25 71/26 71/27 72/1 77/4 77/12
---	---	--

T		
<p>THOSE... [44] 77/22 78/25 79/1 83/6 83/19 83/20 85/25 86/2 87/26 91/15 104/24 105/1 106/22 112/1 119/18 123/3 124/24 128/8 131/1 131/6 131/6 131/7 131/12 131/15 132/18 136/20 145/9 145/24 153/14 153/21 161/8 161/9 162/23 166/27 173/28 174/11 185/18 186/6 188/22 191/7 191/22 201/14 205/19 207/11</p> <p>THOUGH [13] 23/11 74/18 95/21 95/28 97/18 99/22 106/4 115/16 116/3 122/1 122/10 124/20 202/23</p> <p>THOUGHT [10] 42/26 48/5 95/16 128/13 128/15 128/16 129/25 139/7 181/25 198/9</p> <p>THOUGHTS [1] 115/19</p> <p>THOUSAND [1] 20/10</p> <p>THOUSANDS [3] 30/8 30/10 58/5</p> <p>THREE [25] 5/24 19/3 22/11 23/17 30/1 35/27 44/23 44/27 47/14 67/5 67/10 72/27 76/28 77/22 78/18 78/26 84/11 99/15 106/2 106/16 112/19 115/9 135/16 193/26 207/11</p> <p>THROUGH [44] 9/16 9/23 9/25 9/26 11/2 11/4 12/16 30/20 39/5 42/9 48/23 50/16 51/2 55/14 61/5 66/5 67/2 70/6 75/1 85/7 88/23 104/14 123/2 140/1 143/9 158/17 158/26 162/3 162/7 170/4 170/13 171/22 172/18 173/5 175/26 187/8 188/25 195/2 198/14 202/22 202/22 207/5 207/13 208/14</p> <p>THROUGH HAP [1] 42/9</p> <p>THROUGHOUT [7] 50/1 101/3 159/6 159/11 166/16 170/18 171/7</p> <p>THROW [1] 95/10</p> <p>THROWS [1] 134/25</p> <p>THRUST [4] 11/12 29/14 40/18 81/19</p> <p>TICKING [1] 42/3</p> <p>TIE [1] 79/17</p> <p>TILL [4] 8/21 36/4 183/8 202/18</p> <p>TIME [105] 1/6 1/27 9/10 10/5 10/6 10/25 11/8 11/11 11/20 13/12 13/18 15/13 15/16 15/23 16/2 16/15 17/23 18/12 18/15 18/19 18/25 19/21 22/18 23/26 24/26 34/19 35/8 37/10 42/9 42/28 43/8 43/16 43/18 43/18 43/20 43/21 43/27 44/8 44/11 45/21 47/3 47/8 48/6 49/21 49/21 50/13 56/14 57/23 57/24 57/28 58/14 61/5 61/7 63/19 72/5 73/8 82/12 82/25 97/9 99/9 101/5 101/27 102/10 105/28 106/1 106/14 106/17 106/21 107/21 108/8 108/19 111/7 112/26 113/14 114/6 122/21 133/28 137/28 143/28 145/14 145/21 145/24 149/20 161/17 161/26 163/6 163/19 163/22 164/2 164/14 165/7 168/8 169/21 171/18 173/16 175/10 175/13 176/9 176/9 176/24 176/26 193/22 197/25 199/24 206/14</p> <p>TIMES [5] 36/21 47/15 85/18 144/20 168/22</p> <p>TITLE [3] 1/7 114/7 144/25</p> <p>TODAY [23] 15/15 16/10 17/7 18/22 29/11 29/25 35/21 44/6 47/6 51/24 56/16 59/19 60/5 80/9 80/24 83/20 83/23 84/16 114/21 128/14 133/25 138/25 160/28</p> <p>TODAY'S [1] 19/26</p> <p>TOGETHER [10] 23/16 32/1 37/2 57/3 79/5 79/27 99/16 101/12 179/1 191/13</p> <p>TOLD [4] 62/2 146/26 181/23 181/24</p> <p>TOMORROW [1] 71/11</p> <p>TONS [1] 92/23</p> <p>TOO [5] 26/19 40/12 61/22 77/3 100/13</p> <p>TOOK [11] 17/6 23/25 29/21 43/8 60/19 60/22 105/8 111/7 149/4 189/8 205/23</p> <p>TOP [11] 63/7 67/13 76/26 76/27 99/18 141/15 153/4 154/15 158/15 160/20 174/7</p> <p>TOPS [2] 3/12 174/14</p> <p>TOTAL [12] 57/22 57/23 171/20 184/25</p>	<p>184/27 191/22 194/12 195/9 202/3 202/3 202/4 202/23</p> <p>TOUCHDOWN [3] 27/19 27/20 89/10</p> <p>TOUCHED [2] 25/20 84/15</p> <p>TOUTED [1] 95/27</p> <p>TOWARD [2] 28/10 40/22</p> <p>TOWARDS [2] 40/19 42/3</p> <p>TOWER [2] 63/25 157/10</p> <p>TOWN [2] 90/21 90/23</p> <p>TRACE [1] 9/6</p> <p>TRACING [3] 9/25 10/3 56/10</p> <p>TRACK [2] 38/3 160/22</p> <p>TRACKING [1] 54/17</p> <p>TRACT [1] 45/18</p> <p>TRADE [2] 107/12 107/13</p> <p>TRADITIONAL [2] 122/11 136/18</p> <p>TRAFFIC [1] 97/3</p> <p>TRAILERS [2] 119/18 119/18</p> <p>TRAIN [4] 13/17 20/11 20/21 88/21</p> <p>TRAINED [1] 20/8</p> <p>TRAINING [34] 6/21 11/9 13/23 14/2 16/6 16/11 19/14 19/20 20/5 20/15 22/24 22/25 24/14 24/16 40/6 47/23 50/12 50/13 63/6 63/13 68/23 70/3 71/13 83/4 102/1 102/2 107/4 136/17 137/5 137/7 137/16 137/17 137/20 185/20</p> <p>TRAIPSING [1] 46/20</p> <p>TRANS [1] 58/18</p> <p>TRANSCRIPT [5] 1/10 2/23 2/28 131/17 208/15</p> <p>TRANSFERRED [1] 23/7</p> <p>TRANSFERRING [1] 111/2</p> <p>TRANSFORM [1] 70/20</p> <p>TRANSFORMATION [1] 21/12</p> <p>TRANSIENT [1] 119/3</p> <p>TRANSLATED [1] 70/21</p> <p>TRANSMISSION [1] 63/25</p> <p>TRANSONIC [3] 35/17 41/19 55/3</p> <p>TRANSPORT [2] 68/18 78/2</p> <p>TREASURE [2] 107/12 107/13</p> <p>TREATMENT [5] 146/3 146/3 154/25 158/18 158/23</p> <p>TREES [1] 116/3</p> <p>TREMENDOUS [3] 19/7 44/27 46/7</p> <p>TREND [3] 107/23 107/24 127/26</p> <p>TRENDS [9] 106/7 107/9 127/7 127/21 128/8 128/19 130/9 134/28 139/13</p> <p>TRIAL [5] 1/11 2/20 111/16 147/3 207/5</p> <p>TRIALS [1] 50/10</p> <p>TRICKY [1] 26/18</p> <p>TROOP [1] 59/8</p> <p>TROOPS [1] 145/15</p> <p>TRUCKED [2] 15/2 15/11</p> <p>TRUCKS [1] 15/2</p> <p>TRUE [18] 11/16 35/20 39/28 42/22 42/25 47/1 47/2 47/2 47/3 47/6 47/12 52/11 53/5 60/7 127/16 142/2 167/1 208/14</p> <p>TRUTH [10] 3/26 5/16 5/16 5/17 65/4 65/4 65/5 140/24 140/24 140/25</p> <p>TRY [13] 16/23 39/10 50/16 50/19 55/18 55/24 66/2 66/4 66/5 69/22 69/27 84/23 131/24</p> <p>TRYING [16] 54/17 60/3 69/24 81/16 124/22 149/26 152/26 162/17 164/1 164/6 165/10 182/5 197/26 202/28 203/10 205/16</p> <p>TUESDAY [2] 206/15 207/9</p> <p>TULLAHOMA [2] 67/7 72/20</p> <p>TUMBLE [1] 90/4</p> <p>TUNNELS [1] 72/19</p> <p>TURBINE [1] 21/5</p> <p>TURBOJET [1] 19/28</p> <p>TURN [11] 6/13 11/21 44/22 81/8 81/16 81/17 81/18 84/23 84/26 148/26 168/18</p>	<p>TURNED [3] 82/20 101/6 160/27</p> <p>URNS [3] 80/1 84/20 85/23</p> <p>TWENTY [2] 130/23 130/25</p> <p>TWENTY-YEAR [1] 130/23</p> <p>TWICE [4] 79/6 79/10 91/28 144/21</p> <p>TWO [41] 19/23 21/4 31/26 44/26 46/24 57/13 60/28 66/19 75/1 79/6 86/15 86/16 89/25 95/6 95/7 95/16 99/4 99/15 102/9 106/16 109/22 110/4 112/19 112/27 115/13 118/16 119/7 121/26 143/15 153/24 157/24 160/1 162/10 162/27 167/23 169/4 169/10 171/11 179/9 191/13 191/22</p> <p>TWO MILES [3] 75/1 86/15 86/16</p> <p>TYPE [17] 78/1 78/7 86/7 92/14 94/7 94/10 122/8 123/1 128/8 130/25 131/5 131/15 132/18 135/6 136/13 137/8 137/8</p> <p>TYPES [1] 125/7</p> <p>TYPICAL [2] 95/27 144/18</p> <p>TYPICALLY [10] 14/21 25/24 56/21 71/1 99/8 126/14 177/1 184/7 184/10 184/13</p>
U		
		<p>U.S [10] 1/14 2/18 67/12 68/2 115/22 116/5 116/6 116/19 123/14 123/19</p> <p>U.S.A.F [3] 6/16 12/6 37/16</p> <p>U.S.A.F. [1] 16/27</p> <p>U.S.A.F. 044007 [1] 16/27</p> <p>U.S.G.S [1] 173/6</p> <p>UH [3] 39/19 50/23 203/19</p> <p>UH-HUH [3] 39/19 50/23 203/19</p> <p>ULTIMATE [1] 42/4</p> <p>ULTIMATELY [1] 184/17</p> <p>UNCERTAIN [1] 124/4</p> <p>UNCERTAINTY [11] 188/27 189/6 189/24 190/21 194/5 195/16 204/19 204/21 205/5 205/11 205/14</p> <p>UNCOMFORTABLE [1] 109/24</p> <p>UNDER [14] 25/5 54/9 55/3 56/28 77/10 114/11 124/10 139/10 145/17 168/10 170/26 178/26 185/13 198/2</p> <p>UNDERBELLY [1] 89/8</p> <p>UNDERGOING [1] 23/20</p> <p>UNDERNEATH [2] 84/25 161/8</p> <p>UNDERSTAND [31] 1/15 3/13 12/15 12/23 55/15 83/1 86/24 87/21 100/28 110/8 112/9 112/18 115/12 125/18 133/1 133/4 133/7 139/2 185/18 187/1 188/8 189/7 195/7 198/28 200/5 200/6 200/12 200/17 202/2 202/28 207/17</p> <p>UNDERSTANDING [9] 3/8 71/19 71/24 73/1 122/25 131/27 139/11 139/13 199/3</p> <p>UNDERSTOOD [2] 9/2 93/6</p> <p>UNDERTAKE [1] 49/14</p> <p>UNDERTAKEN [1] 36/24</p> <p>UNDERTOOK [2] 23/4 49/26</p> <p>UNDISPUTED [1] 206/21</p> <p>UNEXECUTABLE [1] 72/3</p> <p>UNFAIR [1] 161/22</p> <p>UNFAMILIAR [1] 189/3</p> <p>UNFORTUNATELY [3] 2/4 4/23 80/26</p> <p>UNIQUE [19] 19/4 26/3 84/7 84/8 84/12 84/14 96/22 97/10 97/28 100/12 100/15 102/28 108/21 108/22 108/22 116/20 127/22 130/12 139/8</p> <p>UNIQUENESS [1] 38/10</p> <p>UNIT [1] 82/27</p> <p>UNITED [20] 2/8 2/13 4/20 8/10 8/11 8/20 10/7 12/11 34/3 38/6 64/24 73/12 96/20 111/9 122/15 124/13 130/15 134/16 142/19 160/3</p> <p>UNITES [1] 1/14</p> <p>UNITS [1] 137/11</p> <p>UNIVERSITY [10] 7/6 7/11 7/11 7/19 69/3</p>

U	UTILIZATION [1] 164/26 UTILIZE [2] 163/7 163/19 UTTR [1] 101/28	VOIR [3] 10/13 73/20 147/14 VOLUME [2] 175/20 175/20
UNIVERSITY... [5] 69/5 69/13 69/15 69/15 70/27 UNKNOWN s [1] 205/18 UNLESS [3] 111/26 126/28 132/22 UNLIKE [1] 137/10 UNMANNED [1] 78/6 UNOBTAINABLE [1] 72/3 UNREASONABLENESS [1] 135/7 UNTIL [6] 9/10 40/16 113/13 113/24 113/26 207/25 UNUSUAL [1] 62/7 UP [75] 4/27 6/24 14/24 20/19 22/1 24/20 25/10 27/23 29/14 30/20 35/9 40/21 47/7 53/25 58/3 63/18 65/10 67/14 68/25 69/24 74/1 74/11 74/20 75/7 76/2 81/18 85/18 86/3 86/26 87/5 87/8 87/8 90/23 90/24 91/18 91/26 96/13 97/13 97/24 98/6 98/25 98/25 99/11 105/17 108/28 113/16 117/13 119/2 127/4 128/21 139/17 142/2 142/23 145/14 146/9 148/8 155/11 155/12 156/21 158/3 162/24 165/8 167/23 172/18 177/17 179/11 179/13 179/20 180/18 184/4 196/22 200/25 201/10 204/12 204/18 UPGRADING [1] 170/17 UPLOADED [1] 162/18 UPON [26] 2/12 4/12 51/24 63/22 63/27 153/22 161/21 162/18 162/20 171/9 177/7 178/7 178/8 183/25 183/26 184/4 187/7 187/9 188/2 188/5 188/20 189/9 189/18 191/15 193/3 205/11 UPON WHAT [1] 189/18 UPWARD [1] 205/3 URGE [1] 207/3 US [41] 2/14 3/16 17/6 28/8 29/21 29/27 31/20 69/25 77/20 78/5 86/21 91/2 91/23 93/1 93/2 93/2 93/12 94/3 98/22 98/26 99/3 100/12 100/26 102/25 103/2 103/4 103/10 103/28 107/6 109/1 140/28 168/5 168/14 180/22 181/23 181/24 182/21 187/11 191/4 195/9 195/13 USAF [1] 144/8 USAGE [10] 30/26 30/27 122/28 173/13 185/10 185/14 185/24 187/17 199/7 201/4 USE [82] 13/16 14/6 17/8 20/4 29/9 30/13 31/2 40/2 41/25 42/6 43/19 44/10 63/13 70/7 75/12 76/22 77/7 79/12 81/19 81/23 82/11 84/9 87/6 87/15 91/6 91/7 91/9 92/2 93/15 96/23 97/5 97/18 103/4 103/13 106/10 119/8 122/23 124/18 125/19 134/14 147/11 150/26 152/28 154/9 154/10 158/9 158/25 166/1 166/19 166/23 167/5 167/7 168/19 173/12 174/22 174/23 174/27 175/2 175/9 176/2 176/2 176/12 176/14 177/4 177/21 180/5 182/6 184/22 184/22 184/26 188/28 190/10 192/18 195/21 195/25 200/2 201/19 201/22 202/3 202/3 202/4 203/15 USED [41] 14/3 14/4 14/20 17/14 20/20 20/26 22/17 22/21 26/1 29/26 30/6 31/23 32/4 39/25 39/27 40/14 47/9 57/10 102/22 102/23 102/23 102/24 102/24 103/16 125/14 125/27 136/3 136/10 153/5 158/11 163/7 166/5 166/6 166/19 166/20 166/21 166/22 166/25 166/27 167/6 179/1 USEFUL [5] 3/19 28/8 51/4 87/16 177/16 USERS [1] 101/23 USING [16] 18/12 30/7 30/9 30/10 36/20 51/18 57/1 57/11 82/12 125/15 131/24 169/4 203/19 203/24 203/24 203/26 USUALLY [1] 67/16 UTAH [2] 21/1 102/1 UTILITY [4] 145/22 170/15 171/17 186/5	V V.F.R [3] 95/19 95/22 95/28 VAGUE [7] 10/26 59/23 83/11 169/21 170/1 174/12 181/8 VALID [2] 183/26 184/20 VALIDATE [2] 181/6 183/21 VALIDATING [1] 184/16 VALLEY [9] 1/6 1/22 1/2 45/9 114/2 167/26 167/26 171/5 208/6 VALUABLE [1] 130/12 VALUE [2] 184/25 199/18 VALUES [3] 25/12 174/5 191/23 VANDENBERG [1] 101/23 VARIABILITY [1] 205/12 VARIABLE [7] 81/15 82/6 176/7 176/11 177/22 178/5 188/21 VARIANCE [1] 190/25 VARIATIONS [2] 188/22 188/22 VARIETY [4] 9/11 32/23 46/16 49/15 VARIOUS [6] 14/25 37/1 159/11 163/13 164/7 174/9 VARY [1] 137/19 VAST [6] 27/2 38/10 44/28 45/3 45/3 88/14 VASTNESS [1] 156/4 VEERED [1] 90/2 VEGAS [2] 98/23 98/24 VEHICLE [7] 35/2 36/17 36/19 37/24 38/5 38/7 78/6 VEHICLES [5] 18/15 27/16 29/4 119/23 128/17 VENERABLE [1] 36/3 VERGE [1] 16/16 VERIFIED [1] 193/6 VERIFY [1] 196/25 VERIFYING [1] 23/6 VERSION [1] 119/6 VERSUS [1] 57/27 VERY [106] 12/22 13/18 15/10 16/3 16/17 17/5 17/13 17/13 17/18 17/18 17/25 18/20 19/23 19/25 23/15 23/15 25/20 25/20 26/17 26/17 27/3 27/3 29/2 29/24 31/17 33/5 35/6 39/1 39/8 39/27 41/1 41/27 45/23 45/24 46/10 46/13 46/20 47/3 50/6 50/6 50/11 53/17 63/11 63/24 72/19 75/1 76/9 76/9 77/5 81/24 81/25 82/2 84/24 85/17 86/21 88/3 88/22 91/24 93/8 94/22 94/24 96/4 98/3 100/11 100/22 103/17 104/17 106/12 106/16 106/21 108/2 110/2 113/23 116/2 116/2 122/13 128/23 130/5 135/21 136/19 136/21 136/28 137/21 137/28 138/2 139/22 139/27 141/6 143/23 145/8 154/16 161/5 161/5 163/23 164/20 170/20 175/10 189/4 191/6 191/6 191/8 191/10 191/12 192/28 206/23 207/19 VETTED [2] 176/23 176/25 VIA [1] 2/4 VICTIM [1] 161/12 VIDEO [5] 24/24 24/26 61/28 87/17 88/5 VIEW [8] 40/11 57/17 95/18 112/12 163/16 163/18 171/4 176/18 VIGILANCE [2] 78/3 131/10 VIRTUAL [1] 170/23 VIRTUALLY [3] 19/10 38/12 40/5 VISION [1] 131/8 VISUAL [1] 95/23 VISUALIZE [1] 147/21 VITAL [1] 35/5 VOCE [5] 5/10 49/2 140/14 150/2 150/11 VOICE [2] 67/17 177/17	W WALKED [1] 74/12 WANG [1] 1/27 WANT [32] 2/25 3/25 33/12 42/11 42/11 46/27 50/18 50/20 50/21 60/25 61/4 61/5 61/19 62/16 62/24 71/24 76/1 76/5 79/2 84/19 86/2 88/11 117/19 128/20 131/9 139/3 196/2 202/9 202/15 203/5 205/9 205/10 WANTED [6] 17/12 53/25 111/5 140/4 187/2 203/27 WANTING [1] 135/5 WANTS [2] 150/17 192/4 WAR [46] 13/21 13/22 16/13 16/13 16/14 17/26 17/27 18/1 19/18 20/14 21/3 22/20 22/27 23/1 24/16 28/16 47/4 47/7 47/10 47/25 49/19 50/4 58/1 58/2 58/4 58/14 59/3 59/4 59/5 59/9 59/14 59/21 59/22 59/26 59/27 60/4 60/5 70/14 70/18 107/10 107/11 107/15 139/12 139/13 143/20 144/23 WAR II [1] 60/5 WARFARE [6] 70/13 71/8 71/10 99/13 139/13 139/14 WARS [2] 60/6 77/21 WAS [308] WASHINGTON [2] 8/3 70/27 WASN'T [5] 39/8 42/17 66/4 116/8 176/19 WASTE [7] 146/2 146/6 146/23 151/9 154/25 158/18 158/23 WATCH [2] 17/13 64/2 WATER [168] 2/9 29/12 29/18 30/5 30/13 30/26 30/27 31/1 45/26 45/28 45/28 46/3 46/4 46/5 100/8 101/22 102/14 102/22 102/23 106/1 122/23 122/28 123/26 124/2 124/13 124/14 124/16 124/18 125/3 146/1 146/2 146/23 146/25 146/28 147/6 147/8 147/11 151/9 152/28 154/25 154/26 157/27 158/4 158/18 158/22 158/23 158/23 158/26 159/1 159/3 159/3 159/4 159/5 159/6 159/8 160/27 161/9 164/3 165/28 166/4 166/6 166/10 166/13 166/15 166/19 166/28 167/6 167/22 167/23 167/24 167/25 167/27 167/28 168/5 168/19 168/20 168/24 168/26 169/2 169/2 169/3 169/4 169/5 169/7 169/12 169/13 169/17 170/3 170/13 170/13 170/15 170/16 170/17 171/2 171/18 171/28 172/16 172/20 173/12 173/13 174/22 174/23 174/27 175/2 175/9 175/16 175/24 175/25 175/28 176/2 176/2 176/5 176/12 176/13 176/15 177/7 177/20 177/25 178/4 178/9 178/12 178/23 178/24 179/3 179/12 180/5 181/4 181/11 182/6 183/26 184/1 184/1 184/3 184/5 184/22 184/26 185/10 185/24 185/27 186/5 186/8 186/9 186/17 187/4 187/17 187/26 187/27 188/5 188/14 190/26 191/28 192/1 192/18 192/18 195/10 197/27 198/4 198/7 198/10 199/7 200/16 201/4 201/19 201/21 202/3 202/3 202/4 205/24 WATERED [1] 158/20 WATERLINE [2] 154/24 158/17 WATERWORKS [1] 1/26 WAY [33] 3/19 44/12 51/11 81/20 81/24 84/12 90/26 90/28 98/25 99/11 99/11 99/18 103/2 104/3 106/17 107/3 107/9 107/11 107/15 116/3 121/17 125/5 126/3 131/19 157/11 158/18 169/14 170/12 176/20 177/14 198/9 200/15 200/17 WAYS [11] 71/23 71/24 71/26 72/2 74/17 92/21 112/15 147/21 168/14 169/10 207/16 WE [527] WE'D [7] 99/3 110/3 112/28 128/13 128/16

W		
WE'D... [2] 141/11 168/28	23/11 23/20 25/18 28/27 29/1 29/11 30/9	197/2 200/13 201/13 202/1 202/10 207/9
WE'LL [19] 6/5 6/12 26/23 61/6 78/11 86/18	30/9 30/16 34/7 34/9 34/12 34/22 35/18	207/21
86/18 89/7 89/12 95/16 100/14 110/24	40/17 40/26 42/15 43/16 44/7 47/4 49/27	WHILE [6] 48/21 95/19 95/26 96/15 104/24
113/10 113/23 123/3 153/27 154/1 174/7	49/28 52/5 54/28 55/4 56/12 56/14 56/22	198/27
206/13	56/26 56/26 57/11 58/7 58/11 58/13 80/24	WHITE [1] 102/3
WE'RE [73] 1/14 4/27 5/23 12/15 19/18	80/24 82/12 82/23 82/26 82/28 85/26 87/14	WHO [28] 1/16 2/14 13/19 13/28 38/23 43/3
34/5 34/15 41/5 41/6 41/7 43/23 43/24 63/1	87/17 95/7 96/24 101/17 102/9 102/10	47/26 52/17 70/12 71/3 79/24 88/21 104/6
66/7 67/9 81/14 81/14 82/5 83/22 84/2 85/19	106/15 107/1 110/11 111/20 111/21 138/25	104/23 114/12 117/16 119/17 128/13 145/9
86/16 91/15 91/24 91/25 91/26 94/16 94/18	147/2 149/5 149/19 153/21 155/26 161/13	148/24 160/10 176/24 176/25 178/20 180/7
95/28 101/15 101/20 103/11 104/15 104/16	161/14 161/25 161/26 161/27 162/11 162/17	181/10 192/4 192/25
105/28 107/20 107/25 108/5 108/7 108/18	162/22 162/23 162/25 171/14 174/10 175/12	WHO'S [4] 37/8 78/26 178/22 180/8
108/18 109/16 109/17 109/18 111/21 112/16	193/2 197/21 197/26 198/23 199/17 205/16	WHOEVER [1] 23/7
112/25 113/11 126/16 126/25 129/27 130/10	207/24	WHOLE [12] 5/16 45/9 62/22 63/12 65/4
130/10 133/22 134/4 134/6 135/15 136/25	WEREN'T [1] 163/28	90/6 94/5 107/25 140/24 163/11 164/11
136/26 145/10 145/23 152/23 157/1 162/16	WESLEY [1] 1/19	189/2
162/17 164/1 169/15 169/15 179/26 183/2	WEST [4] 143/19 144/23 156/28 157/1	WHOM [1] 197/21
183/5 199/13 206/14	WESTERN [2] 2/19 20/5	WHOSE [2] 197/23 198/6
WE'VE [19] 2/21 16/17 28/16 80/9 84/15	WET [2] 166/9 166/12	WHY [32] 10/28 19/1 19/13 25/22 25/22
95/8 110/1 111/18 121/7 136/20 140/9	WHAT [275]	36/9 40/20 45/20 53/7 60/1 64/28 85/16
146/21 160/26 170/26 170/27 171/6 171/26	WHAT'S [27] 18/2 21/17 22/14 28/21 33/26	85/21 87/16 97/6 97/10 97/20 112/18 116/23
176/2 197/17	66/27 77/18 78/14 92/2 93/5 106/2 115/5	124/8 124/25 152/16 165/14 168/19 181/19
WEAPON [8] 44/17 54/16 80/22 130/5	115/26 118/4 122/25 127/20 130/17 134/8	181/28 186/25 188/9 189/12 190/20 196/19
130/6 130/6 130/7 131/11	137/23 144/25 149/7 165/6 173/3 175/20	198/15
WEAPONS [10] 40/8 49/27 72/24 99/24	188/12 188/13 202/6	WIDE [6] 25/26 27/12 147/24 154/28 155/4
106/13 106/19 106/20 106/24 107/2 107/3	WHATEVER [8] 14/23 64/3 112/8 164/22	155/6
WEATHER [13] 19/10 31/24 44/27 46/8	164/27 179/12 186/10 199/18	WILL [90] 10/17 16/10 17/26 17/27 17/28
46/18 95/17 95/19 96/2 96/3 96/5 110/16	WHATNOT [1] 57/7	18/28 27/8 33/4 34/18 34/20 38/7 38/19 42/1
110/17 176/10	WHATSOEVER [1] 34/15	43/10 48/2 55/18 57/16 67/17 69/22 69/27
WEB [1] 162/1	WHEN [70] 2/16 2/23 9/8 17/26 26/20 29/13	71/2 71/3 75/14 82/19 83/15 83/23 83/24
WEEK [8] 127/3 149/20 161/15 192/10	30/25 40/19 41/13 41/24 42/27 44/6 47/4	83/25 84/3 84/3 86/2 86/3 90/2 90/7 97/17
206/16 207/6 207/8 207/20	47/25 56/4 56/10 56/11 56/12 56/23 59/3	98/7 99/10 105/17 107/13 107/22 108/25
WEEKS [3] 76/28 85/20 102/9	63/23 70/7 72/25 74/16 75/12 75/27 76/5	110/25 110/25 110/26 110/28 111/1 111/2
WEIGH [1] 137/23	81/4 81/24 85/18 86/7 87/4 87/9 87/22 88/2	113/6 113/10 115/20 116/22 123/2 123/2
WEIGHING [1] 86/10	88/20 95/22 97/18 97/21 97/24 99/1 99/10	127/6 127/17 128/28 129/3 129/6 129/10
WEIGHT [2] 86/4 200/10	99/15 103/10 104/11 105/28 111/7 112/11	129/11 129/16 129/24 129/24 129/24 130/21
WEIRD [1] 115/17	112/14 112/15 119/23 125/19 128/26 133/23	130/26 138/28 139/1 142/8 145/11 147/28
WELCOME [4] 75/27 91/21 114/24 187/19	134/12 136/14 142/4 142/28 145/25 157/5	148/8 149/13 149/14 151/4 151/17 153/15
WELFARE [2] 94/9 158/13	161/6 162/17 166/25 167/3 170/22 179/14	155/12 158/22 160/17 165/19 179/13 184/7
WELL [135] 3/15 11/16 12/21 25/22 28/5	188/28 192/17 195/1 200/7	184/13 187/22 188/26 200/25 206/23 207/8
30/22 31/3 32/6 33/9 34/11 39/27 45/1 46/19	WHENCE [1] 33/19	207/19
47/27 51/11 51/13 53/18 55/19 60/7 61/4	WHERE [73] 3/26 13/10 15/17 16/7 23/14	WILLIAM [2] 1/25 2/15
62/8 65/9 66/7 66/22 71/17 72/7 72/13 73/5	24/5 25/17 26/14 28/3 28/14 30/12 31/21	WIND [3] 27/11 72/19 157/13
75/11 75/24 76/14 76/22 77/8 78/8 78/22	31/22 31/23 34/1 37/4 41/16 41/17 49/26	WIND'S [1] 86/19
80/1 80/19 81/18 82/12 83/20 85/17 86/1	49/27 56/8 63/2 70/13 71/8 71/10 72/2 72/17	WINDMILLS [2] 92/23 92/25
86/7 90/6 90/13 90/28 92/5 92/12 94/18 95/4	72/20 76/6 76/22 77/24 78/17 78/25 85/18	WINDS [3] 157/7 157/9 157/11
96/18 96/19 100/8 101/24 103/19 105/7	87/12 88/28 96/4 98/13 99/3 102/14 106/4	WING [90] 13/5 16/25 17/1 18/27 26/15
107/5 110/24 111/1 111/3 111/23 111/25	109/3 109/10 109/11 109/16 109/18 117/17	32/10 32/11 32/13 32/16 40/21 40/23 65/13
113/19 115/20 116/16 119/9 121/12 124/20	117/22 119/16 119/23 124/9 133/22 133/24	66/17 66/18 66/20 71/2 72/13 72/23 78/19
127/2 127/15 128/10 128/10 129/5 130/3	134/27 136/20 137/26 139/17 142/17 142/21	78/19 106/26 109/15 109/19 109/19 109/26
130/17 134/4 138/17 142/23 143/20 143/24	154/19 155/10 155/26 156/22 156/24 156/26	122/3 125/22 127/4 127/9 127/11 131/4
146/3 146/6 147/5 147/7 148/3 150/20	157/7 157/9 157/12 164/4 166/9 167/22	133/12 134/12 134/14 134/20 134/24 135/6
152/15 152/23 152/25 153/1 157/5 157/28	180/7 207/2	135/11 136/3 136/4 136/11 136/12 136/14
158/3 159/4 161/23 163/15 164/5 165/8	WHEREAS [1] 25/25	136/17 136/17 136/18 136/19 136/24 137/5
165/10 165/20 165/27 167/19 168/7 169/26	WHEREVER [1] 117/18	137/7 137/12 137/15 137/16 137/17 137/17
170/15 170/24 171/16 173/5 175/3 175/12	WHETHER [16] 18/10 39/6 42/12 51/21	137/20 138/1 138/11 138/15 138/21 139/14
176/11 176/17 178/19 178/28 179/2 180/13	66/24 111/6 111/20 116/28 124/23 125/6	149/24 155/28 156/9 177/1 177/3 177/10
181/23 182/11 183/1 184/11 186/27 186/28	126/27 127/10 135/12 176/20 200/26 202/7	177/11 177/15 178/3 178/10 178/16 178/25
189/12 190/24 193/20 199/20 202/3 204/18	WHICH [110] 4/8 5/26 9/28 13/15 13/16	181/5 184/5 185/4 185/25 186/13 186/18
204/20 205/7 205/18 205/18 206/18 206/21	13/17 16/14 17/14 18/17 22/22 24/14 25/19	187/5 187/18 187/26 188/13 189/1 189/17
206/26	26/1 29/1 29/9 29/11 29/14 30/16 35/18	191/19 194/16 194/19 199/5 200/3
WELL-TAKEN [1] 180/13	35/23 36/5 36/26 40/22 41/12 41/14 42/2	WING-WING [1] 109/19
WELLS [9] 167/25 167/28 168/9 168/16	45/5 45/20 47/8 47/14 56/24 66/17 67/12	WINGS [6] 17/2 18/23 66/20 78/18 104/21
169/1 174/16 174/17 174/18 174/20	69/16 72/23 75/17 76/2 77/23 77/26 78/3	109/22
WENDOVER [1] 21/1	80/21 81/12 82/6 82/7 87/6 89/10 90/2 90/22	WINS [1] 77/21
WENDY [1] 1/27	91/6 91/27 94/3 96/13 99/26 100/10 101/14	WINTER [1] 46/1
WENT [18] 2/2 9/3 9/8 19/8 19/22 47/14	101/28 104/2 107/13 108/9 108/28 110/11	WISH [2] 61/23 166/2
67/2 69/12 102/9 102/22 157/28 162/1	110/11 111/13 113/18 115/7 115/9 115/17	WISHES [2] 1/17 165/2
162/24 169/1 182/16 187/8 190/2 195/2	115/24 116/5 116/27 118/15 119/11 122/6	WITHIN [13] 8/25 37/4 75/21 77/3 103/6
WERE [102] 2/7 2/8 2/9 2/10 2/12 3/4 3/8	122/22 126/4 128/4 130/12 130/15 131/5	124/13 125/28 130/15 148/26 152/15 161/14
3/12 3/19 3/27 15/13 15/15 17/2 18/11 18/27	131/8 131/20 138/11 139/12 146/17 148/2	168/12 207/5
19/1 19/8 19/22 19/28 20/2 20/3 21/28 23/6	148/4 150/26 153/28 157/11 159/1 159/6	WITHOUT [12] 32/4 80/5 80/6 80/7 95/25
	159/9 161/19 163/21 163/23 167/14 167/24	133/25 165/4 165/11 165/11 165/12 168/25
	168/24 177/11 179/1 187/10 187/26 195/8	188/9

W	WOUND [1] 58/3 WRIGHT [5] 41/26 43/4 49/11 49/17 143/13 WRIGHT-PATTERSON [1] 143/13 WRITE [2] 131/1 196/6 WRITTEN [4] 118/12 130/24 134/18 135/14 WRONG [2] 19/8 169/1 WROTE [1] 50/24 WYNDER [1] 1/19	193/18 194/25 196/7 196/25 197/20 201/17 201/17 202/19 202/26 202/26 203/13 203/20 204/15 205/4 205/18 YESTERDAY [9] 1/24 2/3 2/8 4/8 17/11 18/6 30/11 40/4 80/10 YET [4] 44/8 50/2 167/6 201/5 YF [1] 56/23 YF-12 [1] 56/23 YIELDED [1] 191/1 YOU [791] YOU'D [7] 7/4 58/15 75/23 133/11 134/9 140/1 164/28 YOU'LL [1] 154/23 YOU'RE [61] 2/20 19/18 45/17 46/28 47/23 47/24 55/13 60/26 60/27 63/6 68/7 70/7 71/9 71/11 72/4 76/18 77/16 82/16 89/22 89/26 97/19 97/20 97/21 99/10 103/23 104/24 108/12 110/8 112/14 114/24 120/4 121/17 121/21 121/23 121/28 124/9 126/15 129/20 130/24 131/5 133/21 134/5 135/13 136/21 138/27 139/22 146/26 152/18 156/28 157/6 157/16 169/26 177/25 182/5 187/19 189/8 190/9 192/9 193/8 193/10 205/25 YOU'VE [14] 2/19 28/16 61/6 67/22 87/15 95/7 109/25 123/14 126/7 164/14 180/12 185/20 186/28 191/14 YOUNG [3] 69/24 90/10 91/17 YOUNGER [1] 142/12 YOUR [273] YOURS [1] 116/9 YOURSELF [1] 39/16
WITNESS [53] 2/10 4/13 4/17 4/23 10/13 10/19 30/24 34/1 48/10 48/18 51/18 51/20 61/12 61/24 64/11 64/23 64/25 65/20 73/21 73/22 114/11 120/14 123/6 124/20 132/2 139/24 140/17 147/14 147/15 150/17 152/20 162/28 163/2 163/28 164/9 164/10 164/14 165/11 165/15 174/26 175/1 180/3 180/9 182/20 182/24 182/26 185/6 187/3 187/11 187/11 187/20 187/21 199/10 WITNESS'S [4] 132/1 163/8 163/8 180/1 WITNESSES [5] 3/2 2/17 119/15 164/7 164/7 WON'T [3] 112/6 150/20 176/4 WONDERFUL [1] 38/11 WONDERFULLY [1] 25/26 WONDERING [1] 39/6 WOOD [1] 1/17 WOODEN [1] 20/19 WORD [5] 92/17 134/26 139/6 139/17 188/28 WORDS [3] 20/16 23/5 159/24 WORK [30] 2/18 2/21 7/7 23/4 23/5 23/15 68/19 72/9 79/5 79/22 79/23 80/19 82/19 83/18 83/26 86/12 93/16 97/20 97/25 97/26 98/8 100/25 115/20 119/3 119/17 125/5 148/25 163/3 203/14 206/24 WORKED [4] 59/16 73/4 168/13 189/4 WORKER [1] 7/14 WORKING [11] 1/21 7/27 9/12 10/1 18/25 19/24 52/15 84/23 99/5 144/9 178/23 WORKS [2] 145/11 181/10 WORLD [34] 13/21 15/23 16/2 16/12 17/26 17/27 18/1 19/6 19/18 19/26 19/27 21/3 22/20 22/27 24/16 28/16 29/4 32/20 47/4 47/7 47/10 47/25 49/19 58/1 58/2 59/3 59/4 59/5 59/21 59/26 60/4 85/22 92/11 189/3 WORLDWIDE [1] 21/12 WORRIED [4] 47/27 93/18 171/3 171/4 WORRY [6] 90/6 91/4 91/5 92/8 92/8 92/9 WORTH [2] 105/10 112/8 WORTHY [1] 41/15 WOULD [185] 4/7 4/15 4/28 4/28 5/12 13/23 14/21 14/22 14/22 14/25 14/26 14/28 15/1 15/3 16/7 16/8 16/10 18/16 18/22 19/26 20/9 20/13 20/16 20/17 22/15 23/8 23/8 23/15 26/11 26/20 26/22 27/3 29/10 29/13 30/7 30/8 30/28 31/9 31/11 35/3 35/26 39/10 39/26 40/8 42/5 42/8 42/22 42/25 43/7 43/12 43/14 43/17 43/19 43/28 44/10 44/12 45/18 45/19 47/3 48/9 51/7 52/3 52/17 55/17 57/2 57/14 58/16 58/17 58/18 58/19 59/8 63/23 63/27 64/13 64/25 64/26 67/12 67/12 69/21 70/9 75/7 75/7 75/19 77/25 78/1 78/6 79/2 79/8 79/28 81/9 81/19 84/12 86/8 88/6 89/10 90/3 90/21 92/18 93/19 95/9 95/10 95/16 97/15 99/8 99/15 100/9 104/1 104/2 106/11 106/24 107/19 108/15 109/23 109/24 109/24 111/10 111/12 116/18 116/19 117/13 118/5 118/6 119/21 125/5 125/24 127/13 127/25 129/5 129/6 132/11 133/20 133/20 133/24 133/26 134/22 134/22 136/15 136/23 137/5 137/12 138/23 138/24 149/27 152/16 160/28 163/17 163/17 163/19 163/23 163/27 164/15 164/24 166/22 167/7 169/5 175/19 176/4 176/17 176/20 176/21 178/26 179/9 184/5 184/10 184/21 184/24 190/1 190/3 191/18 193/26 194/1 195/19 195/24 195/26 199/7 199/8 199/17 201/14 202/5 202/10 202/11 203/3 203/18 204/22 206/20 WOULDN'T [9] 40/27 41/2 45/26 84/9 104/25 111/15 179/8 205/21 205/24	X X-1 [4] 21/11 21/18 35/1 41/21 X-15 [1] 35/1 X-48 [1] 32/15 X-51 [1] 35/21 XL [1] 54/22 XS [1] 21/9 XS-1 [1] 21/9 XX [1] 127/4 XX FIGHTER [1] 127/4 Y YEAH [10] 2/2 5/11 41/16 47/2 49/7 91/11 111/5 124/22 150/16 203/28 YEAR [48] 8/21 19/10 21/26 38/12 55/22 56/2 66/18 66/19 67/2 85/21 85/24 87/9 88/22 94/13 94/15 94/15 96/2 124/14 124/15 124/17 124/18 130/23 130/27 131/2 131/13 131/20 131/20 138/10 144/14 153/21 153/24 169/16 169/23 172/17 172/18 173/17 178/7 189/8 189/11 191/25 192/2 193/14 193/17 194/8 203/4 203/12 203/18 205/23 YEAR-LONG [1] 88/22 YEAR-ROUND [2] 19/10 38/12 YEARLY [1] 169/25 YEARS [70] 11/3 17/6 17/25 30/1 35/27 35/27 39/25 54/25 71/7 82/5 96/16 99/2 106/2 106/5 110/23 112/13 112/13 112/17 112/19 112/23 119/7 127/18 127/27 128/9 128/14 128/27 129/4 129/7 129/10 129/12 129/15 129/22 129/23 129/27 130/3 130/4 130/19 130/21 130/25 132/19 133/23 133/24 135/5 135/8 135/9 135/13 135/13 135/16 137/24 137/28 143/15 145/3 168/13 171/6 173/16 173/19 173/20 173/27 174/5 175/18 175/26 189/20 189/26 191/9 193/24 193/27 194/3 195/16 203/7 205/26 YEARS' [1] 173/13 YELLOW [1] 87/6 YEP [1] 48/28 YES [155] 1/26 2/27 5/22 6/8 6/14 6/18 6/20 6/23 6/25 9/3 9/19 10/12 11/23 14/9 16/21 18/14 19/21 22/4 24/13 25/3 26/27 28/20 33/16 37/14 38/17 39/21 45/25 46/9 46/23 48/22 50/25 50/28 52/22 52/24 53/11 53/20 54/1 54/8 55/16 55/17 58/28 59/10 60/14 62/20 65/21 69/20 74/14 76/4 76/20 79/16 87/18 87/20 101/13 111/25 114/20 114/27 115/2 117/24 117/27 118/2 118/5 118/8 118/16 118/19 118/27 120/6 120/9 123/7 123/25 123/28 126/1 126/9 126/12 128/24 129/6 133/13 133/18 135/24 140/6 140/10 140/15 141/17 142/10 143/5 145/5 146/11 147/1 147/13 148/11 148/23 148/28 150/28 151/16 151/21 153/11 153/19 154/11 157/20 159/14 167/8 167/13 167/21 168/2 169/25 171/11 171/26 172/6 172/6 172/12 172/12 172/13 173/15 174/1 176/17 177/18 177/23 177/28 178/17 181/9 182/8 183/18 185/9 185/12 185/16 185/19 185/22 186/11 186/15 188/1 190/3 190/19 191/16 191/21 192/5 192/11 192/22 193/6 193/9 193/11 193/15	
		Z ZERO [1] 83/20 ZEROED [1] 19/13 ZEROES [1] 105/18 ZEROSCAPHING [1] 170/28 ZIMMER [8] 1/21 4/6 30/23 38/24 53/3 179/22 187/13 198/28 ZIMMER'S [1] 200/7 ZONE [3] 91/7 91/9 92/2 ZONES [2] 76/21 91/13 ZOOM [2] 153/3 155/26