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PP RUWPQS

DE RUWPQA 307C 0500210

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P 182354Z

FEB 18 1966

FM USAEC WALTER F WHITE ALBUQUERQUE NMEX

TO RUTQBN/1/ AF ADVON TORREJON AB SPAIN PASS TO W R BARTON AND S A MOORE /SEIRIES C/

RUEAHQ/ASST TO SECRETARY OF DEF (ATOMIC ENERGY) WASHDC /SERIES D/

RUEPXG/USAEC DMA WASHDC /SERIES E/

RUWMFNA/DNS KIRTLAND AFB ALBUQUERQUE NMEX /SERIES F/

RUWPQL/LASL LOS ALAMOS N M ATTN FRANK DUNN /SERIES G/

RUWPQS/SANDIA CORP ALBUQUERQUE NMEX R C MAYDEW AND W R HOAGLAND

/SERIES H/

RUCDSQ/SEG AFSC WRIGHT PATTERSON AFB OHIO ATTN R W BACHMAN /SERIES I/

RUWTBTA/DAD EGLIN AFB FLA ATTN M R BENNETT /SERIES J/

AEC

BT

S E C R E T RESDAT GP-1 FOLLOWING FROM W N CAUDLE. FINAL REPORT ON

"OPERATION SUNDAY" AT WSPG FOLLOWS:

[REDACTED]

THE FIRST, DROPPED FROM A NOMINAL 9500 FT MSL, WILL BE CALLED EXPERIMENT NO. 1. THE SECOND, DROPPED FROM A NOMINAL 15,000 FT WILL BE CALLED EXPERIMENT NO. 2. THE GROUND ELEVATION AT THE IMPACT POINT WAS 4,000 FT MSL. BECAUSE OF INCOMPLETE BALLISTIC DATA, THE IMPACT VELOCITIES WERE 560 FT PER SEC FOR EXPERIMENT 1 AND 740 FT. PER SEC. FOR EXPERIMENT NO. 2. BOTH UNITS FELL IN A FLAT SPINNING MODE.

OBSERVATIONS: EXPERIMENT 1 HIT NEAR A HUMMOCK OF DRY ROOTBOUND DUNE SAND, COVERED BY MESQUITE. THE HUMMOCK SLIGHTLY ALTERED THE SHAPE OF THE CRATER; BUT, IN OUR OPINION THE HUMMOCK HAD NO EFFECT ON EXPERIMENT 1.

REC'D 9320

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MAR 15 1966

~~RESTRICTED DATA~~

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THIS DOCUMENT CONSISTS OF 5 PAGE(S)
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DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEW DATE: 11/16/99	2. DETERMINATION (CIRCLE NUMBER)
AUTHORITY: 105 CFR 115.606	1. CLASSIFICATION REMAINED
NAME: WALTER F WHITE	2. CLASSIFICATION CHANGED TO:
2ND REVIEW DATE: 11/16/99	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: 105 CFR 115.606	4. COORDINATE WITH:
NAME: WALTER F WHITE	5. CLASSIFICATION CANCELED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY):

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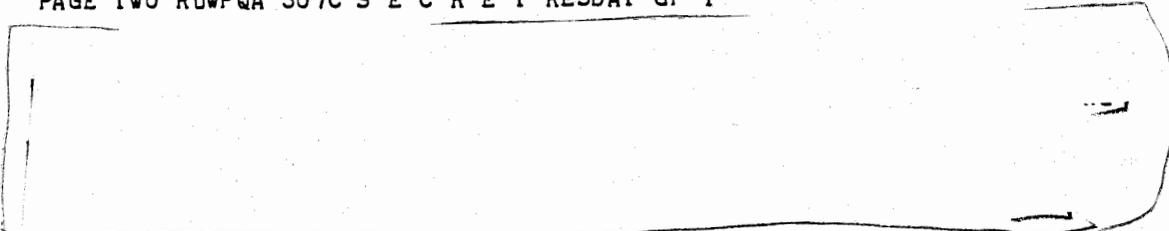
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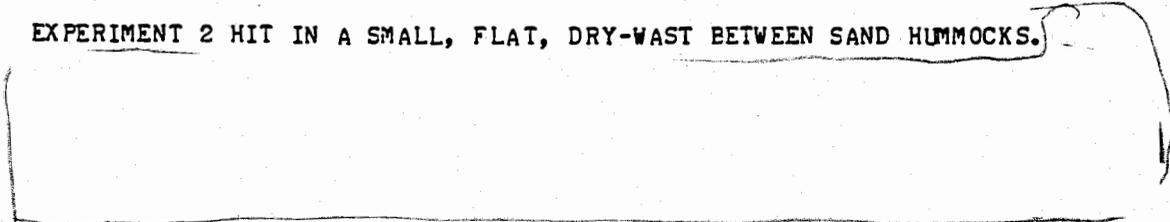
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THE DEPTH, BELOW ORIGINAL GROND SURFACE, TO THE TOP OF THE HIGHEST PART OF THE UNIT WAS 3.1 FEET. THE DEEPEST POINT OF UNIT 1 WAS ABOUT 4.5 FEET BELOW ORIGINAL GROUND. GRAVELS AND SMALL ROCKS, UP TO 4 OR 5 INCHES IN DIAMETER, HAD BEEN BROKEN BY THE IMPACT. THE PAINT ON THE TOP SIDE OF THE UNIT WAS NOT DISTURBED. THE PAINT ON THE UNDER SIDE OF THE UNIT WAS COMPLETELY REMOVED AND THE EXPOSED METAL SURFACE HAD SOME STRIATIONS AND ABRASIONS. THE NOSE RING HAD SHEARED OFF, BUT NO OTHER STRUCTURAL DAMAGE WAS APPARENT IN THE UNIT AT THE TIME OF RECOVERY. THE CRATER FOR EXPERIMENT 1 WAS SIMILAR TO THE CRATER FOR EXPERIMENT 2. FOR THIS REASON, THE CRATERS WILL BE DESCRIBED IN DETAIL FURTHER BELOW.

EXPERIMENT 2 HIT IN A SMALL, FLAT, DRY-WAST BETWEEN SAND HUMMOCKS.

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THE DEPTH, BELOW ORIGINAL GROUND SURFACE, TO THE TOP OF THE UNIT WAS

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3.8 FT. THE DEEPEST POINT OF UNIT 2 WAS ABOUT FIVE FEET BELOW ORIGINAL GROUND SURFACE. THE PAINT ON THE TOP SIDE OF THE UNIT WAS NOT DISTURBED. THE PAINT ON THE UNDER SIDE OF THE UNIT WAS COMPLETELY REMOVED, AND THE EXPOSED METAL SURFACE HAD SOME STRIATIONS AND ABRASIONS. THE NOSE RING HAD SHEARED OFF, BUT NO OTHER STRUCTURAL DAMAGE WAS APPARENT IN THE UNIT AT THE TIME OF RECOVERY.

DESCRIPTION OF CRATERS: THE CRATERS FOR THESE EXPERIMENTS WERE TYPICAL FOR THIS TYPE OF IMPACT IN ALL BUT THE SOFTEST OR HARDEST OF SOILS. THE CRATER AND ITS RAYS (EJECTA) APPEAR DARKER THAN THE ADJACENT GROUND SURFACE IMMEDIATELY AFTER IMPACT. THE DARKER COLOR IS DUE TO THE HIGHER MOISTURE CONTENT OF THE EXPELLED MATERIAL, WHICH COMES FROM JUST BELOW THE DRIER GROUND SURFACE. IMMEDIATELY AFTER IMPACT, THE CRATER AND ITS RAYS ARE EASILY VISIBLE TO AN UNTRAINED OBSERVER WITHIN PERHAPS 20 FEET. FROM PREVIOUS EXPERIENCE, WE CAN STATE THAT THE CRATER AND ITS RAYS WOULD BE STRIKINGLY VISIBLE TO AN AIRBORNE OBSERVER OR ON AIRPHOTOS IMMEDIATELY AFTER IMPACT.

WITHIN A FEW HOURS, DUE TO DRYING, THE CRATER AND ITS RAYS BLEND WITH THE ADJACENT DRIER GROUND, AND ARE THUS DIFFICULT FOR THE UNTRAINED EYE TO DETECT. WITHIN ONE DAY, THE COLORATION OF THE CRATER AND ITS RAYS WILL BE INDISTINGUISHABLE TO THE UNTRAINED EYE. THEREFORE, AFTER

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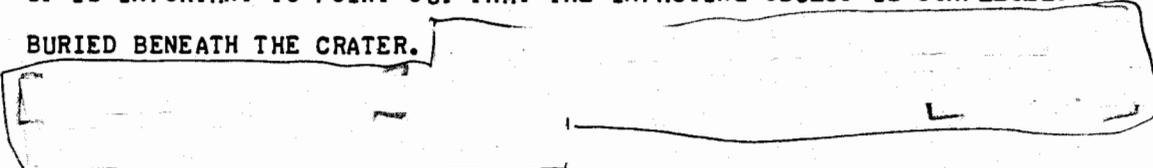
ONE DAY, THE CRATER SHAPE WILL BE THE ONLY DIAGNOSTIC FEATURE OF THE IMPACT POINT. THESE SHAPE FEATURES WILL NOW BE DISCUSSED.

THE RAYS ARE RAISED ONLY ABOUT 1/8 INCH ABOVE THE ADJACENT GROUND SURFACE. THE LIP IS ONLY 1 OR 2 INCHES HIGH AND IS VERY DIFFICULT TO SEE AS A RELIEFFEATURE. IT IS UNLIKELY THAT EITHER THE RAYS OR THE LIP COULD BE USED AS A GUIDE TO THE CRATER LOCATION.

THE CRATER WALLS ARE STEEP, NGAT A SLOPE OF ABOUT 45 DEGREES. THE WALLS GRADE GENTLY INTO THE FLOOR TO FORM A SOFT, SMOOTH, BOWL-LIKE DEPRESSION WHOSE WIDTH IS ABOUT 3 OR 4 TIMES ITS DEPTH. THE SMOOTHNESS AND LACK OF SHARP RELIEF MAKE THE DEPRESSION DIFFICULT TO SEE AND EASY TO DESTROY BY CARELESS TRAFFIC. FOR EXAMPLE, SHADOW DETAIL WILL BE OF LITTLE HELP AT MIDDAY. MODERATE AMOUNTS OF ADJACENT FOILAGE COULD EASILY HIDE A CRATER OF THIS TYPE.

THE MATERIAL IN THE CRATER IS LOOSE AND FLUFFY. THE MATERIAL WILL NOT SUPPORT A MAN, WHO WOULD EASILY SINK IN ABOVE HIS ANKLE.

IT IS IMPORTANT TO POINT OUT THAT THE IMPACTING OBJECT IS COMPLETELY BURIED BENEATH THE CRATER.



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PENETRATION: THE PENETRATIONS FOR THESE EXPERIMENTS ARE DISCUSSED ABOVE.

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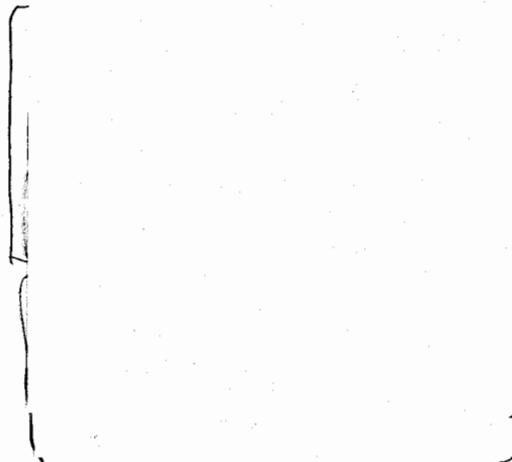
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EXCEPTIONS ARE SATURATED LOOSE SANDS,
SOFT CLAYS (SHEAR STRENGTH LESS THAN 500 PSF), AND STIFF-FISSURED
CLAYS. IN THE DORMER TWO CASES, THE CRATER WOULD BE VEGY SMALL, AND
THE PENETRATION WOULD BE GREATER. IN THE LATTER CASE, THE BLOCKY
NATURE OF THE RAYS AND THE FLOOR MATERIAL COULD BE DETECTED BY THE
CDINED EYDFM END REF WDS:DJH (S-25"24)

BT

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