A card game based on KERBAL SPACE PROGRAM
Rules first created by Atanar
VASSAL Mod created by capi3101
Version 0.1

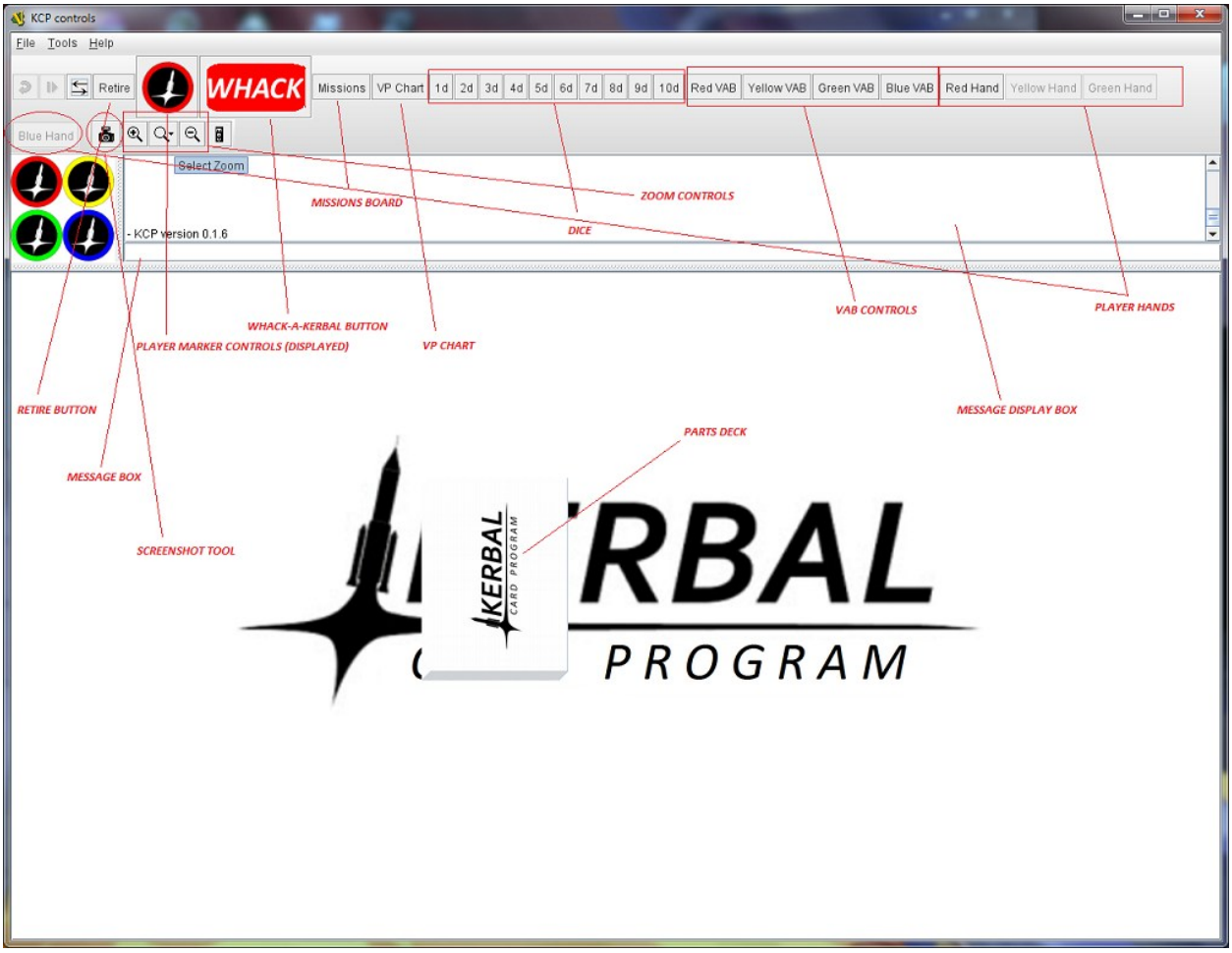
On the tiny planet of Kerbin, the mighty Kerbal Nation has just completed construction of their first operational spaceport (even though it took three tries, dozens of lives and millions of dollars spent on take-out pizzas). With the goals of scientific exploration and potential cheese harvesting from the Mün to offset the cost of getting KSC up and running, the Kerbal Nation launches an initiative to see who can best administrate the facility. To that end, they invited a group of the brightest and best minds available (i.e. the pizza delivery guys) to compete in forging a trail that would lead the Kerbal people to the stars. You are among this group; will you be the one to deliver the first pizza into space…er, to lead all Kerbals to their destiny? Everybody's watching you…so stop picking your nose already…

OBJECT

*Have the highest number of points when the game ends. The game ends when one player reaches a victory threshold agreed upon by all players before the game begins (default 100 points) or when all of the LOCATION cards have been claimed (which may take a **very** long time).*

MOD LOCATIONS AND FUNCTIONS

If you're reading this, the mod is located on your computer and it functions well. Unless you've got Java 1.6 and 1.7 installed on your machine at the same time; then it doesn't function at all. Get rid of Java 1.6. Further attempts at sarcasm in these rules will not result in anything useful for the end-user, so be forewarned.



The Main Interface

The game's main interface includes several controls, all of which are accessible via mouse-click. A few controls are available via hotkey as well. An overview of the main interface follows:

- *Retire Button: This allows a player to relinquish control over one of the four player "colors" in the game. This can be useful if more than one player is utilizing the same terminal, though changes to the rules will need to be made for rocket building and trade if this is the case.*
- *Marker Control: This calls up the box with the four colors of player markers (this box is open in the screenshot above). Markers can be clicked and dragged into positions from this box onto all of the boards for whatever purpose necessary. Once placed, markers can be cloned [CTRL-C] or deleted [CTRL-D] and moved by clicking and dragging,*
- *Whack-a-Kerbal [CTRL-SPACE]: This button generates a message in the Message Display Box and sounds an audible cue on every terminal on which the game is being played (i.e. you'll hear the sound even if another player pushes the button. It's meant to be used if a player notices another player violating one or more of the rules (see Whack-A-Kerbal below).*
- *Missions Board: This button accesses the Missions Board Window, home to the LOCATION CARDS and ACTION CARD DECK.*
- *VP Chart: This button accesses the Victory Point Board, which is used to keep track of the current score.*
- *Dice: [CTRL-NUMBER KEYS]: These buttons roll a number of six-sided dice, which are used during missions to determine success or failure. When pressed, these keys will "roll" the indicated number of dice and display the individual result in the Message Display Box. Players will have to tally up the final result manually (as reporting both individual results and a tally is not possible in the current version of VASSAL).*
- *VAB Controls: These bring up the Vehicle Assembly Building Boards utilized by each of the players. All players may access each other's VABs to look at what rockets they have under construction – this gives*

players clues to where their opponents might be headed and also makes it unnecessary to move a ROCKET stack to another location for launches.

- *Player Hands: These buttons call up a player's hand of cards. A player may only access their own hand window; they may not look at nor manipulate other player's hands.*
- *Screenshot Tool Button: This button is provided by VASSAL; to the writer's knowledge, this button is non-functional.*
- *Zoom Controls: These buttons affect the current zoom level of the window. This is helpful in case someone wants to get a better look at the cards or wants to look at the whole window all at one time.*

The PARTS DECK is located in the left center of the main interface, with the DEBRIS PILE immediately to its right (over the "A" in Kerbal). Cards in the PARTS DECK may be drawn by clicking and dragging them where they need to go; they are automatically turned upright when this happens (so players drawing to their hands should be careful not to drop the card on the interface first). The edges of this interface window are meant to serve as the JUNKYARDS for individual players, with each player "taking control" over one edge of the board. Cards in the JUNKYARDS, as with all cards in the game, have controls that may be accessed via right-click or hotkey (CTRL-D to discard, CTRL-F to flip the card over). Cards in the DEBRIS PILE may be shuffled using CTRL-S and returned to the PARTS DECK via CTRL-R, or accessed via right-click menu. The PARTS deck auto-shuffles.

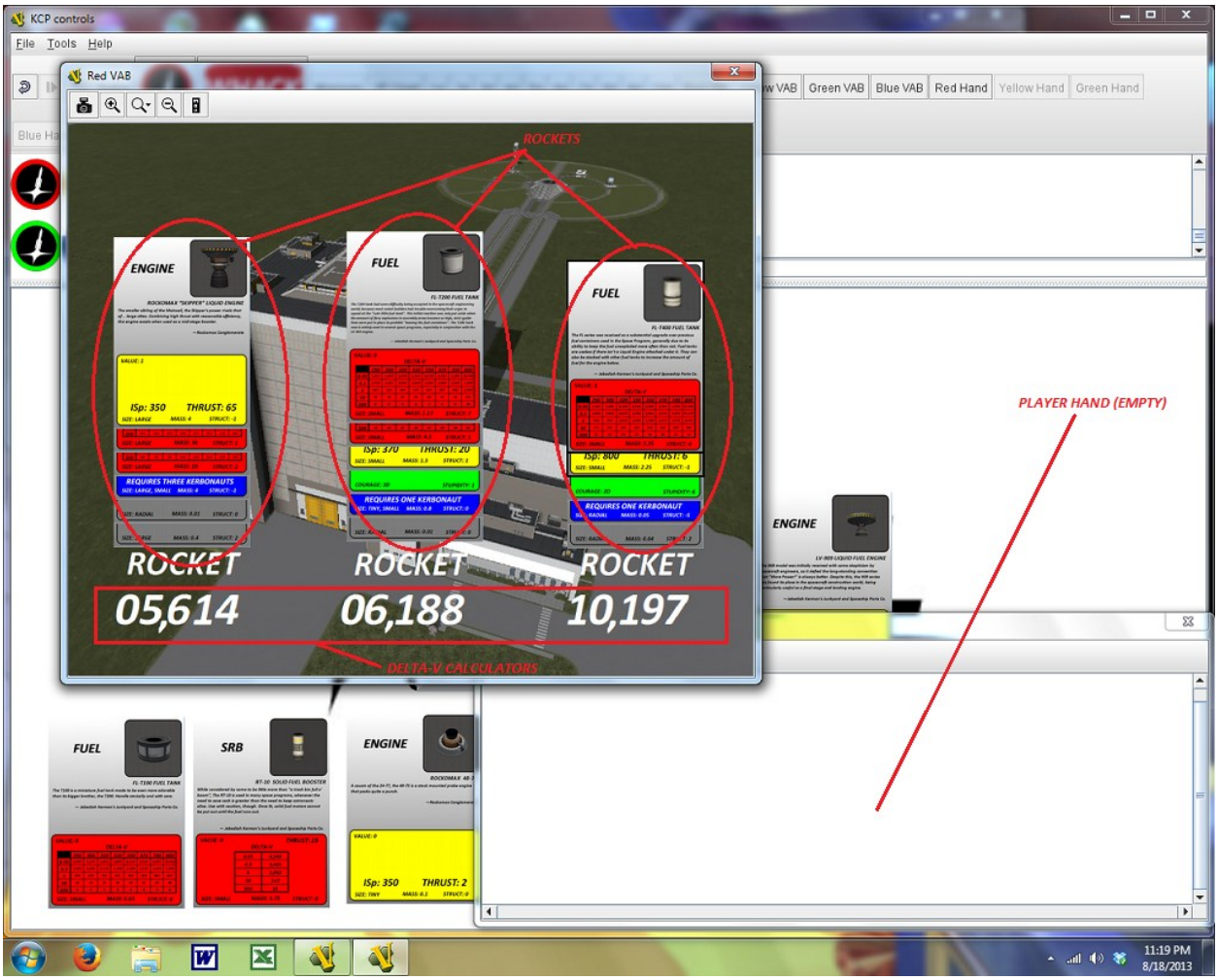
The Missions Board

The Missions Board contains a layout of the LOCATION CARDS as well as the ACTION CARD DECK. The ACTION CARD DECK automatically shuffles the cards contained in it every time a card is drawn or discarded to the deck; like most card decks, controls for these cards are accessible via right-click menu and hotkey (with the same hotkey controls as the cards in the PARTS DECK; discarded ACTION CARDS return to the ACTION CARD DECK). Unlike PARTS,

ACTION CARDS do not automatically flip over when they are drawn. When this board is being seeded at the beginning of the game, it is recommended that the name of each world be left visible while an ACTION CARD is placed on top of the LOCATION CARD. The world's name can then be clicked to return the LOCATION CARD to the top of the individual "stack".

The Victory Point Board

For convenience, the Victory Point board comes equipped with a full set of markers; these can be cloned, moved and deleted as markers anywhere else in the game (it is recommended the initial markers be cloned when a new marker is required on this board). A player may mark their current score along the scoring track. Should their score go above fifty, they may place a marker in the 50x circle; this indicates an extra fifty points per marker above their currently indicated score. Additionally, when a player completes a mission to a world, they should place a marker in the corresponding location box above the scoring track; this will help other players know which worlds have been visited and which ones are still available (this can also be used as a way of scoring in games where the number of worlds that have been visited by a player count towards victory).



VAB and Player Hand

Finally, the VAB board contains areas for the assembly of up to three ROCKETS at a time. Cards on this board will stack up on top of one another readily; whole stacks may be moved at once in this manner. Should access to an individual card be necessary, it will be necessary to right-click on the top card of the stack, drag it elsewhere and continue this process until the desired card is reached. At the bottom of each ROCKET stack is a "calculator" that players may utilize to keep track of the current delta-V of their ROCKETS. Each individual digit in the calculator may be manipulated by selecting it and either right-clicking to bring up a menu or via hotkey (LEFT BRACKET increments a digit, RIGHT BRACKET de-increments it, and BACKSLASH resets it to zero). There is no provision at present to keep track of a rocket's thrust versus mass level or its structure value, though these features may be added in the future. NOTE: This window contains working zoom controls; playtesting has shown that frequent use of the zoom controls is particularly necessary with this window.

ANATOMY OF THE CARDS

This isn't a game about anatomy…it's about space exploration. Duh.

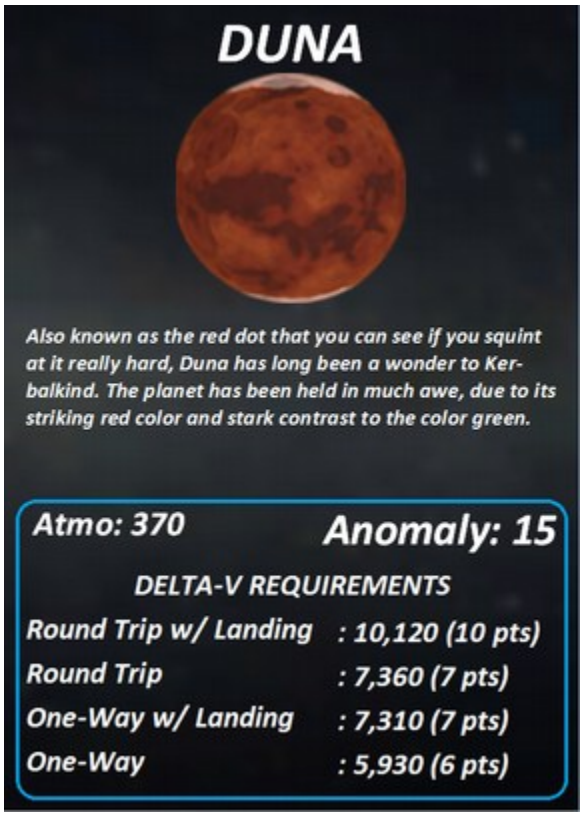
What? Oh…

There are three different types of cards in KCP: LOCATION CARDS, ACTION CARDS, and PARTS. This section gives a brief set of details about each type of card in turn.

LOCATION CARDS

LOCATION cards are probably the easiest set of cards in the game to fully understand. Each location card contains the following pieces of information:

- *The name of the planet/moon in question. (Duna is one of the possible locations a Kerbonaut may choose to visit).*
- *Flavor text, straight from the KSP Knowledge Base.*
- *An atmospheric delta-v rating. Certain ACTION CARDS allow players to "use the atmospheric rating for the target world"; those cards are referring to this number. It generally means the world has an atmosphere (or it's a moon of a world that has an atmosphere), which in turn means the player can do sneaky things like aerobrake or use parachutes for landing. The key thing is that if a number is indicated, players that are allowed to use the atmospheric rating may add the indicated amount to the DELTA-V of their ROCKETS if the LOCATION is their destination. (Rockets heading to Duna may add 370 to their delta-V if they're allowed to).*
- *An Anomaly Point value. Certain ACTION CARDS allow players to "collect the anomaly points for your target world"; this is referring to this value. In the event of a successful mission to the world, a player who can collect Anomaly Points will gain the indicated number of points as a bonus, **provided they land on the world**. (Duna has 15 possible anomaly points).*
- *Delta-V Requirements. This is probably the most important set of information listed on the card. These ratings indicate the amount of DELTA-V a ROCKET must have available to it before it may attempt a particular type of mission to the LOCATION in question. Most locations have four delta-V requirement listings, though some have fewer. A successful mission to a world earns a player a number of points; missions with higher delta-V requirements earn more points. Once a mission to a world has been complete, it removes that world as a possible destination for future missions; this is a key point to the game's strategy. (For Duna, you could pick one of four possible missions – a one way mission is worth 6 points and requires 5,930 m/s of delta-V, for example. A player could try for that, or they might try for one of the higher scoring missions; which one they pick is a strategic decision – they could go for the high-scoring mission, but it'll take longer to build a rocket capable of pulling off the mission and an opponent may beat them to that world in the meantime…).*



The location card for Duna.

ACTION CARDS

ACTION CARDS are also fairly straight-forward. There are 24 of them in the game and each has a different effect. As the name suggests, they allow players to perform special actions. Each LOCATION card has one ACTION CARD underneath it; a player may collect the ACTION CARD by successfully completing a mission to the LOCATION that includes a landing. There are fewer LOCATIONS than there are ACTION CARDS; this has been done deliberately for the sake of changing up the game. No one knows at the game's onset what ACTION CARDS are in play nor what world they'll have to visit in order to collect a specific ACTION CARD.

Some ACTION CARDS require a player to play them immediately, while others do not. If a player does not have to play a card immediately, they may place it in their hand and play it when a situation matching the timing indicated on the card occurs; ***this <u>can</u> be during an opponent's turn.***

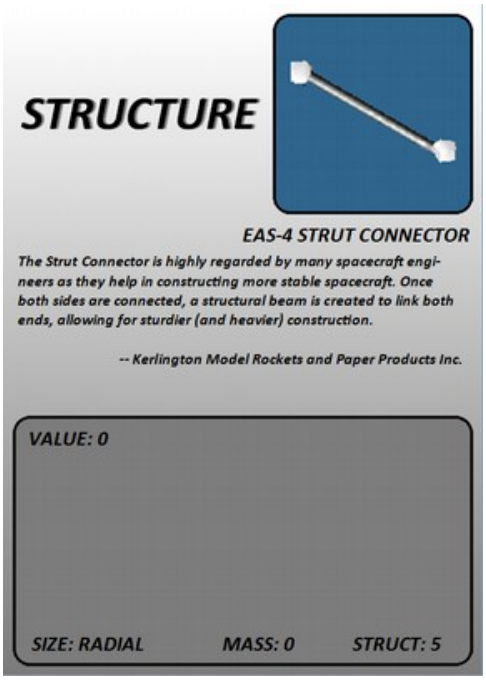
When a player plays an ACTION CARD, they simply place it face up in their JUNKYARD and then carry out the card's instructions. Once the instructions are carried out, the ACTION CARD is discarded; it cannot be used again that same game. Some cards have continuing effects; in order for those effects to continue for the same player, the card must remain in ***their*** *JUNKYARD.*

The dreaded "We've Had a Problem" Action Card.

PARTS

Most of the cards in the game are PARTS, which are used to assemble ROCKETS. Each PART CARD includes the name of the card and flavor text from the KSP Knowledge Base (in most cases). There are seven sub-categories of PARTS: CREW, ENGINE, FUEL, POD, POWER, SRB and STRUCTURE. These cards each have a set of effects specific to their card type, but the vast majority of the cards have four primary statistics: VALUE, SIZE, MASS and STRUCT.

- *VALUE indicates the relative value of the part. If a player discards a card from their JUNKYARD, they may draw a number of cards equal to the card's value from the PARTS DECK and place them into their hand. Some cards are particularly valuable; whether or not a player wants to trade them in is a strategic decision…*
- *SIZE indicates the size of the part. The game has four part sizes: LARGE, SMALL, TINY and RADIAL. A ROCKET may only be made up of parts of the same size* ***unless*** *it contains an Adapter somewhere in its design. RADIAL parts are an exception; they always may be added to any ROCKET.*
- *MASS indicates the mass of the part. Mass is crucial for two reasons – first, it determines if a ROCKET has*



Struts, also known as "Space Tape".

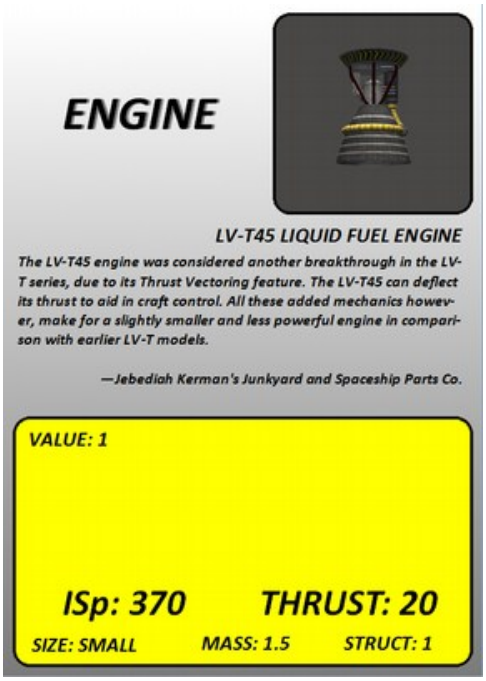
sufficient thrust to take off. Second, it helps to determine the ROCKET'S available amount of DELTA-V.

- *STRUCT indicates the part's contribution to the overall structural stability of a ROCKET. The higher a part's STRUCT rating, easier it is to complete missions.*

Some of the PARTS card categories have special ratings; here's an overview of them:

ENGINE cards have two additional ratings: ISP and THRUST.

- *ISP indicates the ENGINE'S specific impulse rating, which is a measurement of how efficient the engine is in general. The higher this number, the more efficient the ENGINE is. The amount of delta-V a ROCKET stage can produce depends heavily on the ISP rating of the ENGINE.*
- *THRUST indicates the amount of power the ENGINE outputs; the amount listed takes into account the gravity of the planet Kerbin, from which all missions are assumed to start. THRUST is a crucial rating – a rocket that is too heavy cannot take off. Before attempting a mission, a player must total up the mass of their rocket and compare it to the bottom stage's thrust rating. If the mass is greater, the ROCKET doesn't have sufficient THRUST and cannot take off.*

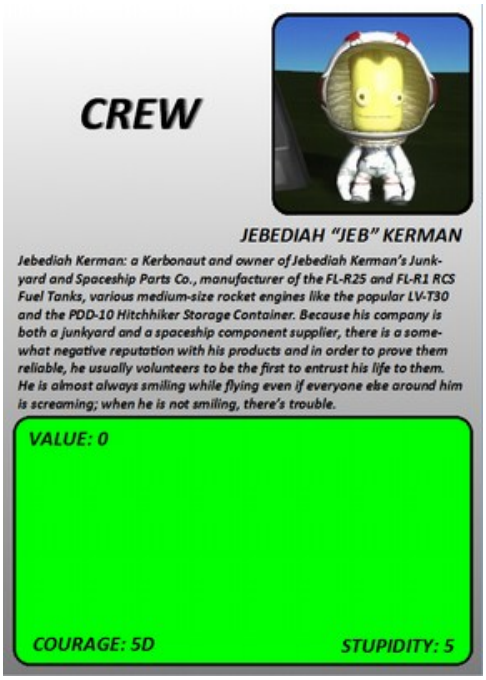


The LV-T45, a good utility engine

POD Cards are used to control a ROCKET and further determine the characteristics of a mission to a particular world. All POD cards either require ELECTRICITY or a number of KERBONAUTS; a ROCKET upon which a particular pod is installed may not take off if the requirements of its POD are not fulfilled (under normal circumstances; there are ACTION CARDS that will allow a player to forego these requirements. ELECTRICITY is provided by POWER cards, which KERBONAUTS are fulfilled by CREW cards.

CREW cards have two additional ratings: COURAGE and STUPIDITY.

- *COURAGE sets the number of dice a player may roll when the time comes for them to launch the rocket (denoted as a number of "D"). The outcome of this die roll determines whether or not the mission is successful. The higher this number, the better. On ROCKETS that require multiple CREW, it's only the CREW card with the highest COURAGE rating that is considered.*
- *STUPIDITY is an indication of how dumb a particular Kerbal is. It acts in much the same way as the STRUCT rating of other cards, though in this case the lower this number the better. On ships with multiple CREW cards, the only STUPIDITY rating considered is the one associated with the CREW whose COURAGE rating is being considered.*

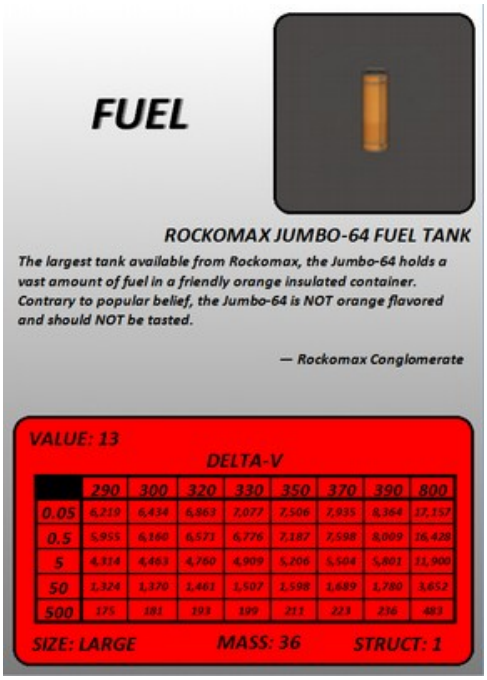


Jeb. Who else?

POWER cards have a PILOTING rating, which functions in the same way as the COURAGE rating of CREW cards. Most POWER cards are based on solar power; these cards require the player to ignore certain die results (either odd or even) to emulate the loss of control effect of going into shadow. It's because of the requirement

of these cards that the mod reports individual die results instead of a sum total. Treat any ignored die roll as a result of zero for purposes of coming up with the sum. (For example, a ROCKET powered with a Gigantor XL Solar Array has a PILOTING of 8D but also indicates that all odd-numbered results must be ignored. Let's say the die outcomes of a PILOTING roll utilizing this card are 1,5,1,4,2,1,6 and 1. Ordinarily this would total up to 21, but all odd-numbered dice are ignored, so effectively the roll becomes a 3D roll with a final result of 12(2+4+6)).

FUEL cards are exceptionally important, because they determine just exactly how much DELTA-V a ROCKET is capable of producing. All FUEL cards contain a DELTA-V chart. To determine how much DELTA-V a FUEL card provides, two things need to be known: the MASS the ROCKET's ***other*** *parts (the FUEL card's own variable mass has already been factored in) and the ISP of its ENGINE. ISP ratings are listed on the top row, while the left-most column contains a series of MASS CATEGORIES; to be in a particular MASS CATEGORY, the MASS of the ROCKET'S other parts must be at least as much as the amount indicated for a given category while not exceeding the amount for the next highest category. The intersection of the row corresponding to the ROCKET'S MASS CATEGORY with the column corresponding to the ENGINE'S ISP contains the ROCKET'S DELTA-V. (For example, a ROCKET contains a Mk1 Lander Can (mass 0.6) with a Kerbal, a Jumbo-64 Fuel Tank, and a Rockomax Skipper Engine (mass 4, Isp 350, Thrust 65). The mass of the other parts (the lander can and the Skipper) is 4.6 tonnes, so the rocket will fall in the 0.5 tonne mass category (it's not quite massive enough to be in the 5 tonne category). Since the Skipper's ISP is 350, we can reference the 64's DELTA-V chart and see that in this case the ROCKET will have 7,187 m/s of DELTA-V – making it capable of performing a number of possible missions. Note that the ROCKET'S total MASS accounting for the Jumbo 64 is 40.6 tonnes, which is less than the Skipper's 65 Thrust rating, so this ROCKET can definitely take off).*



The Jumbo-64, largest fuel tank in the game. Note its Value rating…

There are other rules associated with DELTA-V determination, as will be discussed later. There are also a very few scenarios where the combined MASS of a rocket's other equipment will be less than 0.05 tonnes; players should just use the 0.05 tonne MASS CATEGORY in those cases. Finally, SRB cards also contain a DELTA-V chart that functions in the same manner as FUEL cards; they also function as their own ENGINE cards and have a THRUST rating just like ENGINE cards.

HOW TO SET-UP THE GAME

Very carefully. Duh.

To begin the game, each player rolls 2d; highest result gets to go first. If there's a tie, the affected players continue rolling until a clear-cut highest roller is finally achieved. High result (i.e. the first player) gets their first choice of chip color and gets to pick which side of the MAIN BOARD will act as their JUNKYARD, with the next highest result going next on down to the low throw; they get whatever's left. NOTE: After everybody's seated around the table, the deal and gameplay proceeds clockwise, starting with the first player.

The first player will then set out the LOCATION CARDS in a specific order from their left to their right (they get to go first, so they get to read the cards easiest…everybody else can just suffer). The order is always as follows: Mün, Minmus, Eve, Gilly, Duna, Ike, Moho, Kerbol, Dres, Jool, Laythe, Vall, Tylo, Pol, Bop and Eeloo. Once these cards have been set down, the first player will shuffle the 24 ACTION CARDS and place one ACTION CARD under each

LOCATION CARD. Note that there are more ACTION CARDS than LOCATION CARDS; any unused ACTION CARDS should be set aside and not used during the course of the game. First player will then shuffle the PARTS DECK and start the DEBRIS PILE once they are finished by discarding the top card from the top of the PARTS DECK. First player will then deal three cards to each player, forming their initial hand; play commences once the hands have been formed.

(Note for mod users – the mod automatically shuffles the PARTS DECK and the ACTION CARDS, the latter of which is located with the LOCATION CARDS on the MISSION BOARD. First player will still need to deal out ACTION CARDS on top of with each LOCATION CARD and then click anywhere on any still-visible portion of the LOCATION CARD to place the ACTION CARD beneath it.

HOW TO PLAY

Very carefu……oh wait, I already used that one. Let's go with "Very well" instead. Duh.

On a player's turn, they may conduct the following actions:

1. *Draw ONE card from the PARTS DECK or DEBRIS PILE.*
2. *Make ONE trade between their HAND and their JUNKYARD.*
3. *Sell ONE card from their JUNKYARD.*
4. *Launch ONE of their ROCKETS.*
5. *Play an ACTION CARD if possible.*

Between turns, a player may conduct the following actions:

1. *Add cards to their ROCKETS.*
2. *Negotiate trades with other players.*
3. *Play an ACTION CARD if possible.*

The player may elect to skip any of these actions if they so choose and the do not have to do them in the order listed, but they may NOT take any single action more than one time on a single turn.

POSSIBLE ACTIONS DURING A PLAYER'S TURN

Draw ONE card from the PARTS DECK or DEBRIS PILE:

If a player elects to draw a card from the PARTS DECK or DEBRIS PILE, they simply draw the top card from either pile. This card must be placed face-up in their JUNKYARD.

Make ONE trade between their HAND and their JUNKYARD:

A player who elects to make a trade between their HAND and their JUNKYARD simply picks up any card in their JUNKYARD and places it in their HAND. When they do this, they must take a different card from their HAND and place it in the JUNKYARD. Note that by doing this, a player's opponents will have a clue about at least one of the cards in that player's hand, but sometimes what's in the JUNKYARD is helpful and what's in the HAND isn't. A player may only make a trade between HAND and JUNKYARD if they have at least one card in both; a player with no cards in their HAND cannot just pick something up from their JUNKYARD.

Sell ONE card from their JUNKYARD:

To sell a card from their JUNKYARD, a player has two options: they may either place the card directly in the DEBRIS PILE or they may attempt to trade the card for a different card in one of their opponent's JUNKYARDS. If they place the card directly in the DEBRIS PILE, they may immediately draw a number of cards equal to the value of the sold card from the top of the PARTS DECK and place these cards in their HAND. Cards with a zero value may be "sold" in this manner but the player will NOT be allowed to draw cards into their hand in that case. Once a player has sold a card to the DEBRIS PILE, they cannot attempt to conduct trade with their opponents on the same turn.

If a player would like to elect to make a trade, they may negotiate with any opponent but may only make ONE trade with ONE opponent and if a trade is successfully concluded, the player may not sell a card to the DEBRIS PILE in the same turn. The opponent may ask for more than one card from the player's JUNKYARD, but may never ask for cards from that player's HAND. Alternatively, the player may ask for multiple cards from their opponent in exchange. Opponents never have to trade once a player has entered into negotiations with them and MUST stop building ROCKETS once an offer has been made if they hope to avoid getting WHACKED. Likewise, once an opponent has refused to trade, a player must not attempt to trade with them again or risk getting WHACKED themselves (see the WHACK A KERBAL section below).

Launch ONE of their ROCKETS:

Before a player may launch a ROCKET, it MUST contain the following elements:

- *At least one FUEL TANK (red card)*
- *At least one ENGINE (yellow card; a rocket with an SRB does not need an ENGINE as well)*
- *At least one POD (a blue card, either a manned capsule OR a probe chassis)*
- *The correct number of required crew OR an electrical power source (a green card).*

*A ROCKET **may** include STRUCTURAL elements (grey cards) that will help enhance its capabilities, but these are by no means required. Further, all parts of a ROCKET **must** be the same size (exception: RADIAL parts may be placed on any ROCKET; ADAPTERS also override this rule), the total MASS of the rocket (I.e. the combined mass of all its parts) may not exceed the total thrust of the ENGINE, and the ROCKET must have enough DELTA-V to fulfill one of the available LOCATION CARD requirements. If a rocket does not fulfill all of these conditions, it may not be launched. If a player attempts to launch a ROCKET and an opponent notes that one of these requirements has not been fulfilled, they may WHACK that player; the launch is treated as a failure in that case.*

*To determine if a ROCKET has sufficient DELTA-V, the player may look up the "mass category" of their ROCKET on the right hand side of each of the ROCKET'S FUEL cards and find the intersection between that category's row and the ISP of the ROCKET'S ENGINE card. A ROCKET is in a particular mass category if the mass of all elements **except fuel tanks** is at least as much as what's listed.*

When a player launches a ROCKET, they declare the ROCKET they're using as well as the LOCATION to which they intend to fly and what MISSION they're attempting: a one-way trip, a one-way trip with a landing, a round-trip or a round-trip with a landing. One-way trips have smaller delta-V requirements, but score fewer points than round-trips. Missions without landings also have smaller delta-V requirements but the only way to gain access to a LOCATION's action card is by landing.

The player will then roll the number of dice indicated by the COURAGE rating of the craft's CREW card if it is manned or by the PILOTING rating of the craft's POWER card if it is unmanned. In the case where the craft has multiple CREW cards, use the CREW member with highest available COURAGE rating. In order for the mission to succeed, the result of the roll must be equal to or greater than a value equal to the number of points attempted in the mission, minus the total STRUCTURE rating of all elements of the ROCKET, plus the piloting CREW card's STUPIDITY rating (if applicable).

If the mission fails, the player does not score any points or collect any cards and all parts in the ROCKET must be placed in the DEBRIS PILE. They lose one point for each CREW card that winds up in the DEBRIS PILE in this manner (due to their mission ending in typical Kerbal fashion - i.e. a painful, fiery death).

If the mission succeeds, the player scores a number of points equal to the amount they attempted to earn for the mission, plus one for each CREW card included in the mission and any additional points indicated for certain cards they may have included in their ROCKET (such as scientific equipment). They further collect the LOCATION card for themselves; that LOCATION becomes unavailable for future missions. If the mission attempted included a landing and was successful, the player immediately collects the ACTION CARD under the location and places it their hand; they must play it immediately if the card says to do so, otherwise they may keep it until needed. If the mission attempted did not include a landing, the player simply discards the associated ACTION CARD. If the mission included a Kerbal, they score one additional point per Kerbal provided they attempted a round-trip; if it's a one-way trip, they lose one point per Kerbal included in the mission. In all cases, all parts in the ROCKET must be placed in the DEBRIS PILE with the exception of any CREW cards, which go into the player's JUNKYARD instead.

Multiple Fuel Cards

A ROCKET can contain more than one fuel card, but the effect on the available delta-V is reduced if this occurs. The largest (i.e. most massive) FUEL card is always counted as the "main" fuel card, and produces the full amount of delta-V indicated. A second FUEL card only generates one tenth the amount indicated, a third generates one-hundredth, a fourth generates one-thousandth and a fifth generates one-ten thousandth. In all cases, any remainder should be truncated, and it is the next most massive fuel card that counts as second, third, etc.

Staging and Decouplers

Certain STRUCTURE cards are "decouplers". There are two categories of decouplers in the game, STACK DECOUPLERS and RADIAL DECOUPLERS. Both forms of decoupler add another "stage" to a rocket. Each stage must contain both an ENGINE card and a FUEL card (or an SRB), but only the uppermost "final" stage need contain a POD in this case. When figuring out the mass category for a particular stage, the ***entire*** *mass of* ***all*** *stages above it (including the mass of all fuel cards) must be included. There must be sufficient thrust in a lower stage for its own mass as well as for all stages above it. Only the lowest stage need produce sufficient thrust for the ROCKET to take off, provided it generates at least 4,500 m/s of delta-V; if it does not, subsequent stages must have enough available thrust until the 4,500 threshold is achieved. Once the 4,500 threshold is reached, thrust may be ignored.*

RADIAL DECOUPLERS in particular are powerful cards – they multiply the stage mass and thrust when utilized based on the size of the ROCKET on which they are used. If applied to a TINY ROCKET stage thrust and mass are multiplied by four. On a SMALL ROCKET, they are multiplied by six and on a LARGE ROCKET, they are multiplied by eight. The multiplication effect carries over to any later stages. Only one RADIAL DECOUPLER may be played on any given ROCKET, while a ROCKET may contain multiple STACK DECOUPLERS.

An Example of a Mission Attempt and Planning

For example, a player has built a simple Small rocket with a Command Pod Mk-I, three FL-T800 fuel tanks and an LV-T30 engine, with Jeb at the helm. They want to send their Rocket on a mission to Moho. The combined mass of the non-fuel parts – the Command Pod and the LV-T30 – is 0.8+ 1.25 tonnes, or 2.05 tonnes total, so its mass category is 0.5 tonnes (it has greater than 0.5 tonnes of mass but less than five tonnes). The LV-T30's thrust rating is 21; the FT-800s have a mass of 4.5 tonnes each, so the rocket's total mass is 15.55 tonnes and it does have sufficient thrust. The ISp of the LV-T30 is 370; checking the FL-T800 cards, we see that the intersection of the 0.5 tonne category and 370 Isp says 5,526 m/s of Delta-V. The second fuel tank gets only 552 m/s of delta-V and the third only gets 55, so its total delta-V is 6,133 m/s (5526 + 552 + 55 = 6133). It's a complete rocket, but there's not enough delta-V for it to complete any of the Moho missions. The player decides to continue building up that rocket.

On their next turn, they draw a TT-70 Radial Decoupler as well as an LV-T45 Engine (20 Thrust, 370 Isp, 1.5 mass). They make the decision to add these elements to their rocket once their turn ends. They place two of the FL-T800 tanks in the radial stage, move the LV-T30s to the radial stage and put the LV-T45 in the central stack stage. They now reassess the rocket: the upper stage mass is now 2.3 tonnes, keeping it in the 0.5 tonne category. We've kept one fuel tank, so the rocket's delta-V in the upper stage is 5,526 m/s and there is more than sufficient thrust available to lift its mass even accounting for the 4.5 tonnes of the fuel tank (the total upper stage mass is 6.8 tonnes, a figure we'll need soon). Now for the radial stage, it's a small rocket, so the thrust and mass are multiplied by six. For purposes of its delta-V, we have to add the full mass of the upper stage delta-V plus six times the mass of the Engines – that'll be 7.5 + 6.8 tonnes, for a total mass of 14.3 tonnes, so the lower stage will be operating in the five tonne mass category. We've got nine tonnes of fuel tanks, which then gets multiplied by six for purposes of determining thrust – another 54 tonnes of mass. So the total absolute mass of the rocket at this point is 68.3 tonnes; since we've got a total thrust of 129 in the radial stage, we're in good shape. For the five tonne category, we only get 1,984 m/s of delta-V out of an FL-T800, so we get 1984 + 198 =2,182 m/s of delta-V out of the radial stage. The total delta-V of the rocket is now 7,708. We're still not quite there.

*On the next turn, the player draws a TR-18D Stack Separator and an LV-N Atomic Rocket engine (6 Thrust, 800 Isp, 2.25, Mass), elements they definitely choose to add to their rocket. They rearrange the stack once more to put the Pod, a tank and the LV-N on top, then the radial stage with a tank and the LV-T45s next, followed by the Stack Seperator, the third tank and the LV-T30s. The Mass of the upper stage becomes 2.25+0.8=3.05 tonnes, still putting it in the 0.5 tonne mass category. At 800 Isp, that gives the FL-T800 a whopping 12,631 m/s of delta-V. There isn't enough thrust for that stack to take off by itself, though (adding the 4.5 tonnes for the tank gives the stage 7.55 tonnes, more than the 6 thrust rating for the LV-N), so the player will need to have 4,500 in lower stages. The radial decoupler multiplies the mass and thrust by six for the next stage; that'll be 1.5 * 6 = 9 tonnes + 7.55 tonnes = 16.55 tonnes for a five tonne mass category, and27 tonnes of fuel tanks for a combined mass of 43.55 tonnes for the radial stage. There's once again sufficient thrust in the stage – and it produces 1,984 m/s of delta-V. The stack separator stage comes after the radial stage, so the radial effects still apply. 6*1.25 = 7.5 tonnes of engines + 43.55 tonnes of stack above give the rocket 51.05 tonnes, enough for the 50 tonne mass category, and another 27 tonnes of rocket fuel puts the total mass of 78.05 tonnes, which it can still handle (total stage thrust being129) . Unfortunately, this only adds another 277 m/s to the rocket, so combined it has 14,892 m/s of delta-V…but it still can't launch since it only has 2261 m/s of delta-V in the lower stages.*

On the next turn, the player draws an TVR-2160C Stack Quad Coupler…and puts it on the center stage as soon as they can. The Quad-Coupler quadruples the available stage thrust and adds 10% delta-V for good measure; the 24 thrust is more than enough for the upper stage, and the delta-V of the stage is increased to 13,894 to boot. The extra 0.18 tonnes of mass isn't enough to throw off the balance for any of the lower stages. The rocket now has 16,155 m/s of available delta-V, more than enough for any of the Moho missions.

So on their next turn, the player goes for broke and declares their intention to do a Round-Trip to Moho with a Landing, shooting for 15 points. The Structure rating of their rocket is eleven, (0 for the Command Pod, 5 for each FL-T800 fuel tank (15 total), -1 for the Quad-Coupler, -1 for the LV-N, ,-1 for the Radial Decoupler, +0 for the LV-T30, -2 for the Stack Separator and +1 for the LV-T45 = 11) and Jeb has a stupidity rating of 5. So the target number is going to be nine (15 – 11 + 5 = 9), and Jeb's got five dice on which to do it. The die is cast and the result is 14, so the mission is a success. The player collects the action card under Moho and looks at it; it's Splashdown, so the player goes ahead and scores 16 points for the mission (15 for the mission, plus one for returning a Kerbal alive) and marks the Moho mission as done on the scoring card. Jeb goes back to their JUNKYARD – but the effect of Splashdown (a card that plays immediately) lets the player keep up to three parts from their ROCKET; they elect to keep the LV-N, Quad-Coupler and Radial Decoupler, the useful bits that made their mission a success…

POSSIBLE ACTIONS BETWEEN TURNS

Add cards to their ROCKETS:

A player may elect to add one or more cards to any ROCKET in front of them when it is not their turn (this is done between turns so that players have extra time to think about and plan what they're doing without holding everybody else up). When adding cards to a ROCKET, a player may only add parts to a ROCKET from their HAND; they may never add parts from their JUNKYARD.

Negotiate Trades with Other Players

*If the current player attempts to open up a trade with a player when it is not their turn, that player must stop doing **everything** else immediately and resolve the trade with that player; failure to do so opens up that player to a WHACK. They may go back to other business once the trade has been resolved. The current player may only offer trade with a player once; they may be WHACKED if multiple attempts at trade are made.*

MISCELLANEOUS RULES

WHACK-A-KERBAL:

If at any time a player notices another player violating the rules, they may slap the top of the ACTION DECK (or hit the WHACK button). If multiple players notice the violation, they may each attempt to be the first to slap the PARTS DECK; the first player to do so bears the burden of proving the violation. Slapping the ACTION DECK immediately stops play while the potential rules violation is investigated. If it is determined that a player has violated the rules of the game somehow, they must pay a penalty – if the violation happened prior to a launch or if the offender was building a rocket during their turn, they must discard the entire ROCKET. If the offending player attempted a trade after having been refused, the other player may take a card of their choice from the offender's JUNKYARD. In all other cases, the slapping player is entitled to a card of their choice from the offender's VAB or JUNKYARD. If, however, there is found to be no rules violation, it is the slapping player who loses cards; the player they slapped against is entitled to a card of their choice from the offender's VAB or JUNKYARD.

Ancient Kerbal Temple (Mod only):

The Ancient Kerbal Temple ACTION CARD instructs a player to draw a card from their opponent's hands and place them into their own hand. Since players cannot access each other's hands in the VASSAL mod, the following procedure may be utilized instead: each opponent will select a card from their hand, flip it over and place the card in the player's VAB instead. The player may then collect the cards and place them into their hand from there. Care must be taken not to expose the cards selected other players and the players may agree to "take turns" placing cards in the VAB if they so choose.

LEGAL NOTICE

WARNING: This rulebook consists of 100% matter. Any incidental contact of this book with antimatter in any form will result in a catastrophic explosion.

All of the contents included in this game will exert an equal but opposite force to any force applied to said contents. This phenomenon is not unique to this game.

The entire physical universe, including this book and its contents, could very well collapse back into an infinitesimally small space with little or no advance warning. Should a new universe re-emerge, the existence of this rulebook in that universe cannot be guaranteed.

Any reference to any life-form living, dead, or non-existent may or may not be coincidental and is probably intentional.